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## Early impacts of the Victorian Training Guarantee on VET enrolments and graduate outcomes

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NATIONAL VOCATIONAL EDUCATION  
AND TRAINING RESEARCH PROGRAM

## RESEARCH REPORT

# Early impacts of the Victorian Training Guarantee on VET enrolments and graduate outcomes

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MELBOURNE INSTITUTE OF APPLIED  
ECONOMIC AND SOCIAL RESEARCH



Australian Government  
Department of Industry





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## **RESEARCH REPORT**

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# About the research

## *Early impacts of the Victorian Training Guarantee on VET enrolments and graduate outcomes*

Felix Leung, Duncan McVicar, Cain Polidano and Rong Zhang, Melbourne Institute of Applied Economic and Social Research

In early 2008, in response to changing labour market demands and concerns over skill development and use in the Australian population, the Council of Australian Governments (COAG) initiated the National Agreement for Skills and Workforce Development. A component of the agreement focused on reforming the training market to be more demand-driven and responsive to the labour market. Victoria was the first state to introduce reforms, with the first round, referred to as the Victorian Training Guarantee (VTG), implemented between July 2009 and January 2011. The Victorian Training Guarantee differs from the national reforms in three main ways: places available are uncapped and based on student demand, although there is an upskilling requirement for those aged 20 years and over; there is full contestability between public and private providers for places; and there is greater flexibility for providers in the setting of course fees.

The Victorian system has come under scrutiny from opposing governments, other jurisdictions, providers, industry, and the public. What is apparent is that there has been a significant increase in vocational education and training (VET) enrolments since the reforms were first implemented. This research finds that, between 2008 (pre-reform) and 2011 (post-reform), the Victorian Training Guarantee was estimated to have led to a 35-percentage-point growth in enrolments, with much of this growth in private providers. This increase is far greater than that which has occurred in other states/territories over the same period. What is not as clear however is the impact of the training guarantee on the outcomes for learners of different ages and those from a non-English speaking background, Indigenous students and students with a disability. This is one focus of this research, which uses data from the NCVER Student Outcomes Survey and the National VET Provider Collection. The research examines only the first round of reforms, implemented between July 2009 and January 2011. Subsequent reforms introduced in Victoria in 2012 are not part of this analysis.

## Key messages

- For 15 to 19-year-olds, the Victorian Training Guarantee is estimated to improve the likelihood of being in full-time employment six months after training; this group was also satisfied with their course. The outcomes were not as positive for those aged 20 to 24 years, however, possibly suggesting that the upskilling requirements of the training guarantee are limiting the potential benefits for those looking to change their occupation.
- The increases in enrolments for students from a non-English speaking background or who have a disability were not as great as for those who were not in these equity groups. The Victorian Training Guarantee was estimated to have no effect on Indigenous students' enrolments.

Rod Camm  
Managing Director, NCVER

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# Executive summary

Since July 2009, the Victorian vocational education and training (VET) sector has undergone a number of demand-driven reforms, the objective being for the sector more responsive to current and future skill needs.

The aim of this project is to estimate the short-run effects of the first round of reforms – the Victorian Training Guarantee (VTG) introduced between July 2009 and January 2011 – on student enrolments, their course choices and their outcomes. A particular focus is on how the reforms have affected the enrolments and outcomes for equity group members: students from non-English speaking backgrounds (that is, English as a second language), Indigenous students and students with a disability.

Given that other states have either recently implemented (South Australia), or have plans to introduce similar reforms, the analysis presented in this report provides a timely investigation of the likely impacts of the adoption of demand-driven models of VET provision.

At present, there are insufficient data available to evaluate the effects of subsequent Victorian VET reforms; that is, those introduced in 2012 under the ‘Refocusing Vocational Training in Victoria’ initiative (Department of Education and Early Childhood Development 2012), including changes in course subsidy levels and the deregulation of the course fee structure.

The key feature of the Victorian Training Guarantee is an entitlement to a publicly funded place in vocational education and training; the training guarantee also gives students the freedom to undertake the course of their choice with the public or private provider of their choice. Prior to the training guarantee, the provision of vocational education and training in Victoria, as in other states, was primarily supply-driven, in the sense that public funding was allocated directly to providers in the form of a block grant, based in part on historical enrolments and skill forecasts. In practice this meant a cap on the overall number of publicly funded places, with the allocation of places across students determined by providers, which was often on a first-come first-served basis.

At the time of the introduction of the Victorian Training Guarantee, its likely impacts on student outcomes would have been somewhat uncertain. On the one hand, removing the cap on subsidised places could be expected to increase enrolments, including for equity group members who, under the old regime, may have missed out on a place. Greater freedom of course choice and competition between providers might also be expected to enhance skill acquisition and lead to better employment outcomes. On the other hand, it could be that student choices may not align with skill demands and course quality under the new system, particularly where information on course quality and outcomes is lacking or not easily accessible.

This report builds on analyses of the impacts of the Victorian Training Guarantee undertaken by Skills Victoria (2012a) and the Essential Services Commission (2011) and also a parallel study by the authors (Leung et al. 2013<sup>1</sup>). The main contribution of this study is its examination of student post-training outcomes as well as course choices and course completions (Leung et al. 2013). A further contribution of this present study is the use of detailed information from New South Wales, in combination with multivariate analysis, to construct counterfactual outcomes for Victoria (outcomes that reflect what would have happened in Victoria had the reforms not been implemented) in order to isolate the

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<sup>1</sup> Available from the Melbourne Institute website: <<http://melbourneinstitute.com/labour/publications/reports.html>>.

impacts of the Victorian Training Guarantee from the impacts of other changes, such as the rollout of the national education entitlements and changes in economic trends, which occurred at the same time. The construction of counterfactual outcomes to isolate the effects of the training guarantee sets our analysis apart from that produced by Skills Victoria (2012a), with the estimates from the latter representing only changes in student numbers by comparison with 2008. This should be borne in mind when comparing estimates from this report with estimates from Skills Victoria. Because access to a VET entitlement under the Victorian Training Guarantee varies by age, we conduct separate analyses for those aged 15–19 years, 20–24 years and those aged 25 years and more.

The analysis of enrolments presented here draws on detailed administrative data on all enrolments in publicly funded VET courses over the period of interest taken from the National VET Provider Collection, managed by the National Centre for Vocational Education Research (NCVER). The analysis of post-study outcomes, however, is limited by the availability of suitable survey data (taken from the Student Outcomes Survey). Survey data on post-study outcomes are only just beginning to become available for those enrolling after the reforms. Here we limit the sample of analysis to course graduates who enrolled in January or February 2010 and completed by the end of 2011. This has two important implications. First, the available sample is so small that some of our estimates of the training guarantee impacts on post-study outcomes are imprecise and are not as robust as we would like. Second, those in the 25 years and older age group who enrolled in 2010 enrolled prior to the extension of the entitlement from diploma-level courses to any course that is higher than their existing qualifications held in 2011. Therefore, the outcome results for the 25 years and older cohort who enrolled in 2010 are unlikely to give a clear picture of the impacts of the full introduction of the training guarantee for this age group; neither are they likely to give a clear picture of the impacts of the diploma-level entitlement in place in 2010, given that the extension to all higher-level courses had already been pre-announced. Nonetheless, we present the preliminary impacts for this group here for completeness.

As more data become available, obtaining a clearer picture of the effects of the training guarantee using the methods applied in this report should be possible. Even so, future analyses will still need to rely on the Students Outcomes Survey, and will therefore be restricted to analysing outcomes six months after course completion.

## Results

Overall, we estimate that the Victorian Training Guarantee has substantially increased new enrolments in vocational education. In 2011, new enrolments in New South Wales were 6% higher than they were in 2008. In Victoria they were 41% higher. Our estimate of the impact of the training guarantee on new enrolments in 2011 is therefore that it led to an additional 35 percentage points of growth in enrolments. The training guarantee also increased enrolments for two key equity groups (disabled students and students from non-English speaking backgrounds), although to a lesser extent than the increase for non-equity group students. The Victorian Training Guarantee is estimated to have had no discernible impact on Indigenous enrolments. In total, the estimated impacts of the training guarantee on new enrolments are generally consistent with the changes in student numbers reported by Skills Victoria between 2008 and 2011 (2012a), but with some noticeable differences for specific cohorts; namely, Indigenous people and people with a disability. In these cases, changes in student numbers may not merely reflect the impacts of the training guarantee, but also changes in other circumstances at the same time.

Much of the increase in enrolments has been realised as increased enrolments in private institutions. Between 2008 and 2010, the Victorian Training Guarantee was associated with a 60-percentage-point higher growth in enrolments with private providers; between 2008 and 2011 this figure was 300 percentage points. Behind this growth in private provision is a 36-percentage-point higher growth in the number of private providers between 2008 and 2010 and, between 2008 and 2011, a 48-percentage-point higher growth. TAFE (technical and further education) enrolments on the other hand were relatively unaffected, with the Victorian Training Guarantee associated with a seven-percentage-point lower growth than otherwise would have been expected between 2008 and 2011. The suggestion is that private providers have done better than TAFE in responding in the short run to increased demand for publicly subsidised places under the training guarantee.

Taking the limitations of data on post-study outcomes into account, we draw three main conclusions from the multivariate analysis. First, for those aged 15 to 19 – the age group with an open entitlement to a publicly funded course of their choice and with their provider of choice – the evidence presented in this study suggests that the Victorian Training Guarantee has generally exerted positive impacts on outcomes. We find that for course graduates the training guarantee is associated with a statistically significant five-percentage-point improvement in the chances of being full-time employed six months after study and a statistically significant four-percentage-point improvement in the chances of being satisfied with their course. These positive effects may work through a number of different channels, including greater access to training related to skill shortage areas and improved quality of training resulting from greater competition.

Second, the Victorian Training Guarantee appears to have had less positive effects on those aged 20 to 24 years who completed a higher qualification compared with the 15 to 19-year-olds. By and large, the magnitude and direction of the estimated impacts, although statistically insignificant, are less positive than for the 15 to 19-year-olds.<sup>2</sup> Further analyses of the 20 to 24 years age group suggests that these impacts are largely driven by less favourable effects for those who have already attained a certificate level III and above. We cannot rule out the possibility that this result is due to unobserved differences in the characteristics between those who do and do not hold at least a certificate level III that affect the returns from further study. However, the most likely explanation is that the upskilling requirements are limiting the potential benefits from the Victorian Training Guarantee for 20 to 24-year-old course completers: for those with prior qualifications, it makes retraining in areas outside the current expertise more difficult relative to skill deepening in the current field. In cases where an individual's current expertise is not in high demand, attaining a higher qualification in the same area may do little to improve their outcomes. Because the estimates in this study are for course completers only, this effect may be exacerbated if relatively few of those who retrain at a higher level complete their qualification.

Third, we find no strong evidence to suggest that the employment effects from the Victorian Training Guarantee are significantly different for graduates who have a disability or who are from a non-English speaking background, relative to those not in these equity groups. Results for Indigenous students are inconclusive due to insufficient data.

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<sup>2</sup> The only statistically significant result is a reduced chance of working in a higher-skilled job, which is likely to merely reflect greater skill deepening in an existing occupation instead of retraining for another job.

## Implications

The results presented in this study show that demand-driven reforms can improve access for key equity groups, although not to the same extent as for those not part of an equity group, which raises issues of equity of access. The reason for the lower growth in enrolments among equity group members is not answered in this study, but there are several possible explanations. One is that equity groups may have been given priority access prior to the reforms; hence, the entitlement had less of an effect on access to a publicly subsidised place in training. Another is that the lower enrolment response represents short-term barriers to enrolment, either because new providers are yet to develop the capacity to cater for disadvantaged learners, or because equity groups were slow to access information on the training guarantee. Finally, it is possible that in a competitive market, uncertainty surrounding who pays for the cost of student support services may have deterred some providers from enrolling students with special learning needs. In 2010 and 2011, funding arrangements for these services were limited to select groups – Indigenous, those in correction and early school leavers younger than 20 years – and it was unclear whether the hourly fee premium paid to public providers for delivering a ‘full range of services’ included the cost of services to other equity group members. Understanding the reasons underpinning the lower response among equity group members should be a priority. Also, to ensure equality of access under demand-driven reforms, governments should make support for disability services transparent and available on an equal basis for both public and private providers under community service obligations.

The positive post-study outcomes for 15 to 19-year-olds is consistent with results from a parallel study by the authors (Leung et al. 2013), which shows that the Victorian Training Guarantee has led, on average, to increased enrolments in areas of skill demand (measured by the proportion of enrolments in state and national skill shortage areas) and increased course completion rates. These results provide timely support for the introduction of demand-driven VET reforms in other states. However, the poorer outcomes for 20 to 24-year-olds suggest that upskilling requirements aiming to encourage skill deepening may not necessarily lead to better outcomes because they may limit the opportunities for students to reskill in areas better aligned with industry needs.

The positive outcomes from the implementation of the Victorian Training Guarantee for 15 to 19-year-olds do not necessarily mean that broad-based voucher schemes are an efficient use of government funding. The main justification for government funding of VET courses is that there are positive externalities or spillovers that accrue to the community from training. The Productivity Commission (2011) identifies two broad groups of public benefits: accelerated innovation and diffusion of new ideas; and civic benefits, including improved health, well-being and social cohesion. Because of the public benefits from an individual’s training, governments encourage greater participation in training by subsidising training costs. However, given that the public benefits from training vary from course to course, governments should vary their subsidies accordingly.<sup>3</sup>

While this is intuitive in theory, in practice it is difficult to value the public benefit from any extra enrolments associated with a course subsidy. When faced with such difficulties, governments should instead choose key criteria for varying subsidies and justify how these criteria are related to the public benefit of the extra enrolments from the subsidies. Subsidy levels that taper off with increasing course levels, as introduced in Victoria (Department of Education and Early Childhood Development 2012) and South Australia (Department of Further Education, Employment, Science and

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<sup>3</sup> This was the motivation for the Refocusing VET reforms, which, among other things, included a revamping of the course subsidy levels from July 2012 (Department of Education and Early Childhood Development 2012).

Technology 2011), provide a good example of a criterion that may be clearly linked to the public benefits of subsidies. Higher-level courses are well known to have higher private benefits (future wages) than lower-level courses, but lower-level courses may have higher public benefits because they provide an entry point to enable people to develop minimum skills for workforce and community participation. Hence, because the ratio of private to public benefits increases with the level of course, higher-level courses are likely to attract large numbers of enrolments without a subsidy and, hence, assuming diminishing public benefits from extra enrolments, require a lower subsidy to reach the socially optimal level of VET enrolments.

Criteria linked to skill demand, such as ‘industry needs’, as used to justify the variation of subsidies across courses under the Refocusing Vocational Training in Victoria reforms (Department of Education and Early Childhood Development 2012) may be more difficult to link with the public benefits from subsidising vocational education and training. It could be argued that the main public benefit from VET is in preparing young people for work and the social benefits that flow, so that courses associated with jobs that are in high demand are also courses associated with high public benefits. However, barring failures with the labour market, courses linked to higher industry needs will also have higher private benefits, which will attract large numbers of enrolments without the need for higher subsidies.

One reason why high private benefits may not attract large numbers of students is because of a lack of information about the private benefits from various VET courses. MySkills is a first step for students in meeting the need for better information on outcomes from VET study. At present, information on outcomes from MySkills is limited to broad field of study, which may not be indicative of the outcomes from specific courses. To provide course-level information on outcomes, the sample from the Student Outcomes Survey of VET graduates, which is used in the construction of MySkills, must be considerably expanded. At present the sample is not large enough to support the measurement of course-level outcomes. Ideally, the sample will also contain longitudinal information on post-training outcomes, possibly by linking the survey to individual tax record or census information.



# Introduction

Reform of the VET sector is seen by the Australian Government as a key part of policy efforts to meet the combined challenges of skills shortages, sluggish productivity growth and low rates of labour market participation. Under the Council of Australian Governments (COAG) National Partnership Agreement on Skills Reform, all states and territories in Australia have agreed to implement reforms to the VET sector aimed at making the sector more responsive to skill needs, with a number of major reforms at the national level in recent years. But Victoria has gone further and faster down the demand-driven VET reform road than other states. Most notably, under the Victorian Training Guarantee, which was phased in from July 2009, subsidised student places were opened up to private providers. Broadly similar reforms have now been introduced in South Australia (from July 2012) and other states are expected to follow in the near future.

Prior to July 2009, public funding for vocational education and training was allocated directly to (mostly public) VET providers, largely on a block grant basis, in part based on historical enrolments and centralised skills forecasts. In practice this meant a cap on the overall number of publicly funded places, possible mismatches between courses offered by providers and those demanded by students, and constrained competition between providers. Now, following the introduction of the Victorian Training Guarantee and other contemporaneous VET reforms at the national level, the funding for subsidised places in Victoria follows the student, with no overall cap, so that providers must compete to attract students and funding.

Taken together these reforms aim to boost participation in vocational education and training, make the sector more responsive to changing skill demands, and use enhanced competition among providers to drive increases in the quality of provision. However, it is far from certain that the reforms will have these desired effects. First, although removing the cap on subsidised student places is unlikely to reduce enrolments, there may be capacity constraints on the supply side (for example, teacher shortages) or a lack of awareness of the Victorian Training Guarantee and its eligibility constraints on the demand side, which could hold back enrolment growth, at least in the short term (Essential Services Commission 2011). Second, student preferences for courses may not align with those of the government (presumably reflecting forecasts of future labour demand), particularly where students have only imperfect information about the labour market. Third, in perfect markets enhanced competition is likely to improve quality and/or cost-effectiveness; however, in imperfect markets, for example, with imperfect information about quality of provision, this is less likely to happen (Bradley & Taylor 2002). Neither is it clear whether and how the impacts of these reforms will vary across different equity groups.

Timely empirical evidence on the impacts of these reforms is therefore important to support policy and practice. To date evidence has been limited to a handful of descriptive reports tracking changes in enrolments in Victoria up to 2011 (for example, Essential Services Commission 2011; Skills Victoria 2012a). None of these reports presents evidence on graduate outcomes, partly because the necessary data are only now beginning to become available; nor do they measure changes in Victoria against a defined counterfactual (our best guess at what would have happened in the absence of the reforms), making it difficult to separate the impacts of the reforms from other changes over time not related to the reforms (for example, other policy changes at a national level, impacts of the Global Financial Crisis). This project will address these gaps in the evidence base, as far as the currently available data allow.

Specifically, this project will address the following research questions:

- How have the reforms impacted on the number of providers of different types, the number of enrolments and their characteristics (for example, enrolments by different equity groups), and the patterns of course choice (for example, by level and field of study)? Does this vary across equity groups?
- How have the reforms impacted on graduate outcomes (for example, early labour market returns from VET qualifications)? How have the reforms impacted on students' reports of their VET experience and the degree to which they use the skills acquired in their current employment? How does this vary across equity groups?

It is important to keep in mind that these questions relate specifically to the introduction of the Victorian Training Guarantee between 2009 and 2011 and do not take into account the impacts of later reforms in Victoria, including the deregulation of maximum student fees and revisions to course subsidy levels implemented in 2012 under the 'Refocusing Vocational Training in Victoria' initiative (Department of Education and Early Childhood Development 2012).

We address these research questions using data from the years spanning the introduction of the Victorian Training Guarantee. The data have been taken from the Student Outcomes Survey and from the National VET Provider Collection. Descriptive statistics and econometric analysis are used, along with information from other states (primarily New South Wales), to construct relevant counterfactuals in order to distinguish the impacts of the Victorian reforms from other contemporaneous changes.

# The Victorian reforms in context

This section includes a detailed description of the Victorian Training Guarantee and an overview of relevant national reforms to place the Victorian Training Guarantee in context. We also present an overview of the arrangements in New South Wales during the period of analysis – 2008 (pre-reform) to 2011 (post-reform). Arrangements in NSW during the period of analysis are used in this study to represent a counterfactual to the Victorian Training Guarantee, the outcomes from which are used to isolate the impacts of the training guarantee. (Refer to appendix A for a discussion on the use of NSW as a counterfactual.)

## National reforms

Concerns over waning productivity growth, increased global competition and the impacts of demographic changes on labour force participation prompted the Council of Australian Governments to agree on a new human capital reform agenda in March 2008 (Productivity Commission 2012), with COAG subsequently announcing its National Agreement for Skills and Workforce Development (NASWD) in November 2008. The agreement set out the broad objective to move to a ‘demand-driven’ model of VET provision to make the system more responsive to changing labour market needs and thus maintain Australia’s competitiveness.<sup>4</sup> Traditionally, the VET system in Australia could be categorised as a supply-side model, whereby publicly subsidised VET places were allocated directly to selected (mostly public) VET providers, largely on a block grant basis according to historical enrolments and centralised forecasts. Under this system, unless they have an exemption, students in subsidised places pay a fee that is based on an hourly rate, but with a maximum overall fee chargeable in a given year.<sup>5</sup> Contestability between providers was limited to the national user choice program (introduced in 1998), where eligible employers and apprentices/trainees were given the freedom to choose their own registered training organisation (RTO). In 2009, 14% of publicly funded student enrolments were with private providers nationally (Productivity Commission 2011).

The following national targets were set as part of the National Agreement for Skills and Workforce Development:

- doubling the number of qualification completions at diploma and advanced diploma levels by 2020
- halving the proportion of Australians of working age without a certificate III qualification or higher by 2020.

An additional national target was introduced under the National Partnership on Youth Attainment and Transitions agreement as follows:

- increasing the proportion of young Australians (aged 20–24 years) who have attained a Year 12 (or equivalent) to 90% by 2015.

To help meet these targets, national entitlements to training were introduced under the Compact with Young Australians and the Compact with Retrenched Workers. In addition, extra (but capped)

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<sup>4</sup> The entitlement to a publicly funded place in VET was extended under the revised NASWD, which was signed by the states in April 2012. The revised NASWD expands the national entitlement for 25 years and older to a certificate III (subject to entry requirements) for those who do not hold at least a certificate III and to certificate I and II courses in language, literacy or numeracy courses if they lead to certificate III qualifications.

<sup>5</sup> Course fee exemptions and concessions are determined by the individual states. Generally speaking, those eligible for fee exemptions/concessions are low-income earners and other disadvantaged members of the community.

funding was made available for VET places in areas of national priority under the National Partnership Agreement on Productivity Places Program (NPAPPP).

The Compact with Young Australians (sometimes referred to as the Youth Compact) was introduced in April 2009 to encourage participation in education among youth, partly in response to the view that youth had been disproportionately affected by the Global Financial Crisis. A key measure is an entitlement to a government-subsidised education or training place for young people aged 15 to 24 years. For those aged 20 to 24 years with a Year 12 qualification or equivalent, the entitlement is for a course that leads to a higher qualification than they currently hold. For 15 to 19-year-olds the entitlement commenced 1 July 2009 and for 20 to 24-year olds, 1 January 2010. So the Compact with Young Australians, because it introduces an entitlement to a subsidised place for new groups of students, represents a major step away from a supply-driven model with an overall cap. It does not, however, necessarily remove centrally determined restrictions on the number of subsidised places governments are willing to fund at the provider–course level. In other words, the guaranteed place may not be at a provider or in a course of your choosing. The Compact with Retrenched Workers was introduced between 1 July 2009 and 31 December 2009 to give those aged 25 years and over who had lost their jobs during the Global Financial Crisis access to government-subsidised training that counts towards a higher-level qualification.

The National Partnership Agreement on Productivity Places Program commenced on 1 July 2009 (concluding June 2012) and involved a commitment from the state governments to deliver an extra 400 000 additional training places for qualifications of national priority, defined by current skill shortages and emerging skill needs. Around 133 000 places were allocated to job seekers and 270 000 to existing workers, with the Australian Government meeting the full cost of job seeker places and state governments and employers sharing the cost of worker places (60% employer, 40% state government). Note that the Productivity Places Program does not move the VET system away from a supply-driven model with an overall cap on places; rather, it increases the number of subsidised places that governments are willing to fund for qualifications deemed to be of national priority. Victoria was not a party to the Productivity Places Program, but signed a separate bilateral agreement with the Australian Government, which allowed its funding under this program to be delivered under Skills for Growth as part of the Victorian Training Guarantee rollout.

## The Victorian VET reforms

Victoria was the first state to introduce reforms aimed at moving towards a more demand-driven VET system, as agreed under the National Agreement for Skills and Workforce Development, by phasing in the Victorian Training Guarantee from July 2009 to January 2011. The introduction of the training guarantee means that publicly funded places in VET under national reforms are rolled out differently in Victoria from the rest of Australia. In particular the number of places available in Victoria under national reforms is uncapped and based on student demand, there is full contestability for places between public and private providers and there is greater freedom for providers to set course fees. Not only does the Victorian Training Guarantee affect the way national reforms are rolled out, but it also includes extra entitlements to publicly funded VET places, on top of those provided under national reforms. In this study, when estimating the effect of the Victorian Training Guarantee, we estimate the combined effect of these two factors.

In simple terms, to estimate the impact of the VTG, we compare the changes in outcomes following the introduction of the Victorian Training Guarantee in Victoria to changes in outcomes in New South Wales over the same period. Changes in outcomes for NSW over the post-reform period are treated as

counterfactual outcomes in this study; that is, they represent the changes in outcomes that would have occurred if, rather than implementing the training guarantee, Victoria had retained its supply-driven model of VET provision. It is important to generate counterfactual outcomes from another state, rather than merely rely on changes in outcomes in Victoria following the reforms, in order to disentangle the effect of the Victorian Training Guarantee from the effect of other changes that occurred at the same time, such as changes in economic conditions and changes in national training entitlements. Outcomes from NSW over the analysis period are the obvious counterfactual because of the close geographical proximity and similar economic size. More detailed analyses validating the use of NSW as a counterfactual are presented in appendix A.

In the discussion below, we outline the key aspects of the training guarantee reforms in relation to how they differ to arrangements in NSW in 2010 and 2011. We consider 2009 a transition year and hence do not estimate the impacts of the Victorian Training Guarantee occurring at this time.

## Differences in the rollout of national reforms

The key part of the Victorian Training Guarantee that makes the rollout of national reforms different in Victoria is the uncapping of access to publicly funded places (subject to providers' own capacity constraints) and giving students the freedom to undertake their preferred course with their preferred provider, public or private.<sup>6</sup> An important point of note is that the greater freedom to undertake the course of choice under the Victorian Training Guarantee may be more limited for 20 to 24-year-olds than for 15 to 19-year-olds because the former's entitlement is restricted to a higher qualification than currently held (table 1). In NSW during the post-reform period examined in this study, state and Commonwealth funding for vocational education and training under national reforms was still being allocated to public providers under a supply-driven model, except for funding provided to NSW under the Productivity Places Program (table 1) and under user choice, both of which were contested by public and private providers.<sup>7</sup> Under this model, there was limited contestability (outside public funding for apprenticeships/traineeships) and the Department of Education and communities determined the numbers of places by course and by provider, according to targets set out in the plan *NSW 2021* (Independent Pricing and Regulatory Tribunal 2013). In practice, the reliance on a supply-driven rollout of national reforms infers that the availability of public places in vocational education and training in New South Wales was still subject to a cap, although it is unclear whether the cap was binding. The only supply constraints under the Victorian Training Guarantee were provider capacity constraints.

Another key part of the Victorian Training Guarantee that makes the rollout of national reforms in Victoria different from those in NSW is the greater freedom that providers of publicly subsidised courses have to compete on price. Providers are free to set an hourly fee, although the fee cannot exceed a maximum hourly rate and the maximum annual fee for the course level.<sup>8</sup> The maximum fee rates have also been set to try to reflect the relative private benefits from completing a given course level; for example, diploma-level courses attract relatively higher maximum fees than prior to the reforms.<sup>9</sup> In New South Wales over the post-reform period, course fees did not vary by course level or the expected private returns from them, but were based on a fixed ratio of the total cost of the course.

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<sup>6</sup> Private providers can compete for publicly provided courses as long as they have signed a service contract with Skills Victoria. As part of their contract, private providers have to register in Victoria, must demonstrate that they have the capacity to provide quality training, through satisfactory registration audit records and mandatory publication of all audit reports and comply with AVETMISS reporting standards.

<sup>7</sup> Places available in NSW under the NPAPPP funding were still capped.

<sup>8</sup> There are also *minimum* course and hourly fee rates.

<sup>9</sup> Under its 2012 reforms, spelt out in *Refocusing Vocational Training in Victoria* (Department of Education and Early Childhood 2012), the maximum fee cap has been removed, but the overall course fee cap remains.

## Extra entitlements

As well as affecting the way national reforms were rolled out during the post-reform period, the Victorian Training Guarantee also gave Victorians extra entitlements to publicly funded places in vocational education and training. A summary of access to publicly funded places under the training guarantee, including extra entitlements, is presented in table 1. From table 1, we can see that in July 2009, an extra entitlement was given to those in diploma-level courses and above (Diploma entitlement). In January 2010, the full implementation of the Compact with Young Australians meant that extra access to places under the Diploma entitlement was only relevant to those aged 25 years and over. In January 2011, two extra entitlements under the Victorian Training Guarantee were introduced for those 25 years and over: the Foundation Skills Entitlement and the Upskilling Entitlement. Respectively, these give those aged 25 years and over an uncapped entitlement to foundation-level courses and an uncapped entitlement to courses that lead to higher-level qualifications than currently held. In this study, estimates of the extra entitlements introduced in 2011 are not included as part of the analysis of student labour market outcomes because no post-course outcomes for 2011 enrolments were available at the time of analysis.

**Table 1 Access to publicly funded places in Victoria and New South Wales**

			Victoria (VTG)		NSW	
	Age	Eligibility	Contest-ability <sup>a</sup>	Demand-driven <sup>b</sup>	Contest-ability <sup>a</sup>	Demand-driven <sup>b</sup>
<b>Pre-reform</b>						
<i>2008</i>						
Government-supported training <sup>c</sup>	15+					
Guaranteed place in TAFE	15+	Early school leavers				
<hr/>						
<b>Post-reform</b>						
<i>Jan. – Dec. 2010</i>						
Compact with Young Australians	15–19	All courses	✓	✓		
Skills for Growth <sup>d</sup> /NPAPPP	15+	All courses <sup>e</sup>	✓	✓	✓	
Diploma entitlement	25+	Diploma and advanced diploma	✓	✓	na	na
Compact with Young Australians	20–24	Higher than existing qual.	✓	✓		
Compact with Retrenched Workers	25+	Higher than existing qual.	✓	✓		
<hr/>						
<i>Jan. – Dec. 2011</i>						
Compact with Young Australians	15–19	All courses	✓	✓		
Compact with Young Australians	20–24	Higher than existing qual.	✓	✓		
Skills for Growth <sup>d</sup> /NPAPPP	15+	All courses	✓	✓	✓	
Foundation Skills Entitlement	25+	Foundation skill courses <sup>f</sup>	✓	✓	na	na
Up-skilling entitlement	25+	Higher than existing qual.	✓	✓	na	na

Notes: na = not applicable.

a Public funded places are available through public and private providers.

b Allocation of funding at the course/provider level is based on student demand and is not capped and allocated according to government priorities.

c The decision on the types and numbers of courses to publicly fund at different institutions was based on skill need priorities, as decided by Skills Victoria and past allocations.

d The National Partnership Agreement on Productivity Places was delivered in Victoria under this program.

e In NSW, this is based on national priority industries, occupations and qualifications in areas of current skill shortages and emerging skill needs. In Victoria, under the Skills for Growth, the funding was used to support the training needs of small business.

f Foundation skill courses are general courses, typically in numeracy and literacy, to enable employment or further study (see Skills Victoria 2012b for a list of these courses).

## Implications for enrolments and student outcomes

The features of the Victorian Training Guarantee discussed above are likely to affect both enrolments and student outcomes in Victoria relative to other states; however, because these features were rolled out concurrently, we cannot isolate their separate effects, only their total effect. Enrolments may have grown by more in Victoria because the training guarantee makes publicly funded places in training more available. There are several reasons for this: first, there is no cap on the number of publicly provided places; second, full contestability for public funding between public and private providers means that there is a greater available supply to meet any otherwise unmet demand; and, finally, there are extra entitlements for those aged 25 years and over. The added supply of places may be accompanied by greater demand due to the greater freedom to enrol in the course of choice. However, the increase in demand may be more tempered for those aged over 20 years, compared with those aged under 20, because the freedom of course choice is restricted to higher-level qualifications.

The impacts of the Victorian Training Guarantee on student outcomes are more uncertain and depend on whether students make the most of their greater freedom of course choice and whether greater contestability improves training quality. It is not clear that, given greater freedom of choice, students will choose courses with more positive labour market prospects. If students exercise greater freedom of course choice by enrolling in areas with good prospects, but which are capped in other states, then the Victorian Training Guarantee may have a positive impact on student labour market outcomes. Alternatively, the effect may be negative if students use their greater freedom to enrol in courses with greater consumption value than labour market value.<sup>10</sup> For those aged 20 years and older, it is possible that upskilling requirements may impact on their ability to retrain and move into areas of higher skill demand, which would limit any employment benefits.

The direction of any effect from full contestability on training quality under the Victorian Training Guarantee is uncertain. On the positive side, greater contestability may be an incentive to providers to improve quality in order to increase, or maintain, their share of the market. On the negative side, where the quality of training is hard to measure or where information on quality is poor, greater competition may come at the expense of good quality in order to cut costs and compete on price (McMillan 2004; Kranton 2003). Bear in mind, however, that the ability of providers to compete on price was limited by minimum course fees over the period we examined.

Although not related to changes in outcomes at the individual level, but rather at the aggregate level, a third possible effect of the Victorian Training Guarantee on student outcomes is through compositional changes in both the observed and unobserved characteristics of the student body enrolling in vocational education and training as a result of the reforms. However, these possible effects are limited in the multivariate analysis by controlling for changes in a range of observed individual characteristics.

## Demand-driven reforms in other states

Following market-driven VET reforms in Victoria, South Australia introduced its own entitlement scheme known as Skills for All in July 2012. Like the Victorian Training Guarantee, the entitlement under Skills for All is for courses in both government and approved private providers, but unlike its Victorian counterpart, there are no upskilling requirements. Instead, the entitlement and the level of

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<sup>10</sup> This latter point has been the focus of many media reports, especially in relation to the increase in enrolments in personal fitness training courses in Victoria following the reforms. We provide evidence on this point later in the report.

subsidy under the entitlement are determined according to training priorities set by the South Australian Government. A key motivation for South Australia's broadening its entitlement was concern that the upskilling requirements rolled out under the Victorian Training Guarantee for those aged 20 years and older may limit access to training for those who had already completed qualifications or, alternatively, they may encourage poor training choices. Another key difference between the Victorian Training Guarantee and Skills for All is that the availability of publicly subsidised places in vocational education and training is limited to specific government-sanctioned courses, which are also potentially subject to, depending on enrolment growth, caps. At the time of writing, outside Victoria and South Australia, some states had indicated a movement towards similar entitlement schemes. New South Wales had released details of its reforms, known as Smart and Skilled, to be implemented in 2014. Similar to the South Australian reforms, the Smart and Skilled reforms include an entitlement to a publicly subsidised training place at either a government or a private training institute in courses deemed by the New South Wales Government, after consultation with industry, to be of priority. In contrast to South Australia, the NSW entitlement is further restricted to foundation courses and qualification courses up to certificate level III for students who do not have a certificate level IV or above.<sup>11</sup> Following NSW, the Queensland and Tasmanian governments had made a commitment to introducing entitlement schemes for courses up to certificate level III by 1 July 2013 (Department of Education, Training and Employment [Qld] 2012) and 2014 (Skills Tasmania 2012) respectively. In contrast to arrangements in other states, the entitlement model to be implemented in the Northern Territory in 2013 is for certificate level III and above courses at public institutes for those who have not already attained a certificate level III qualification or above (Northern Territory Department of Business 2012).<sup>12</sup> Western Australia is currently in the process of developing a discussion paper on the introduction of an entitlement scheme (Shean 2012). No information is publicly available on the development of an entitlement scheme in the Australian Capital Territory.

## Literature review

The current reforms in Victoria are not the first moves towards a more responsive system and a greater role for competition in vocational education and training in Australia. A good overview of earlier reforms – introducing competitive tendering between providers for public funds, allowing the entry of private providers and aspects of 'user choice' for apprenticeships and traineeships – is reported by the Organisation for Economic Co-operation and Development (OECD; 2008). The same OECD report also makes explicit recommendations for VET reforms in Australia very much along the lines of those recently implemented in Victoria, including an entitlement for students to pursue VET qualifications without charge, up to the level normally attained at the end of schooling (certificate II or III) and that students entitled to funding should be able to choose VET providers.

In terms of the current set of reforms, although it is still early days, a number of reports have already been published that provide descriptive information on how enrolments and course choice patterns have changed in Victoria pre- and post-reform. Skills Victoria publishes regular reports that provide such information, with the latest being *Victoria's training market quarterly report: full year 2011* (2012a), which gives insight into the outcomes from the first year of the fully

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<sup>11</sup> The commitment to an entitlement scheme for courses up to certificate level III is consistent with the national objective of halving the proportion of 20 to 64-year-olds without certificate level III and above between 2009 and 2020, as laid out under the National Agreement for Skills and Workforce Development (April 2012). Subject to a review after the first year, the entitlement may be broadened to higher-level courses (NSW Department of Education and Communities 2012).

<sup>12</sup> There is a commitment to rollout the entitlement to private providers in subsequent years.



implemented Victorian Training Guarantee. The Skills Victoria reports present information on changes in key enrolment indicators, such as enrolments by qualification level, funding source, associated ANZSCO<sup>13</sup> course occupation, enrolments in skill shortage areas and enrolments by equity group. In all of the Skills Victoria estimates, the changes are in 2010 and 2011 enrolments relative to a pre-reform base year of 2008.

Generally speaking, the results from the Skills Victoria (2012a) report are positive. Comparing 2011 outcomes with pre-reform outcomes (2008), the report shows that overall enrolments are up by 38%, with a corresponding increase of 21% in student numbers,<sup>14</sup> with similar patterns of growth across age categories. Accounting for much of the growth is a large increase in private provision of publicly subsidised places, from 14% of the total in 2008, to 40% in 2011. The report also shows larger increases in enrolments in higher-level courses, especially certificates III and IV, and also makes claims that the system is more responsive to employer needs, as measured by the increases in the numbers of enrolments in courses related to skill shortage occupations. The results presented in the report indicate positive results for disadvantaged learners, with 28%, 43% and 68% increases in enrolments estimated among Indigenous, people with disability and culturally and linguistically diverse individuals respectively. These gains may be partly attributed to the greater access to foundation courses (from 2011) afforded under the Victorian Training Guarantee (Essential Services Commission 2011).

While such measures are informative of changes that have occurred in Victoria since the reforms were introduced, they may not reflect the impacts of the reforms per se because the changes will also pick up the effects of other contemporaneous factors influencing the outcomes. In particular, changes in enrolments in Victoria may combine the effects from the greater availability of publicly funded courses through the various Australian Government entitlements (see table 1) with the effects of the Victorian Training Guarantee. To isolate the effects of the reforms from such factors, counterfactual outcomes need to be derived to reflect the likely outcomes in the absence of the reforms, against which post-reform outcomes can be compared.

Here we build on Skills Victoria (2012a) by defining a counterfactual against which to isolate the effects of the Victorian Training Guarantee on enrolment patterns, as well as providing the first analysis of its impacts on post-completion outcomes. In a parallel study by the authors (Leung et al. 2013), counterfactuals were derived (also using information from NSW) to isolate the effects of the training guarantee on demand responsiveness and on the quality of training for 15 to 19-year-olds.<sup>15</sup> Demand responsiveness was measured as the chance of enrolling in courses related to occupations on national and state skill shortage lists, while quality of training was measured by course completion rates, controlling for the characteristics of the students enrolled and their course choices. Leung et al. (2013) found that the Victorian Training Guarantee increased demand responsiveness (although the magnitude of the effect depends on whether state or national skill shortage lists are used) and improved training quality. The current study builds on the previous one by the authors by examining the training guarantee's impacts on labour market outcomes and by analysing differential effects on enrolment and labour market outcomes across equity groups.

Wider international evidence on the impacts of market-based reforms in the education sector draws mainly on reforms in secondary schooling, encompassing studies of competition between mainstream

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<sup>13</sup> ANZSCO = Australian and New Zealand Standard Classification of Occupations.

<sup>14</sup> Some students may enrol in more than one course simultaneously.

<sup>15</sup> Leung et al. (2013) is available on the Melbourne Institute website <<http://melbourneinstitute.com/labour/publications/reports.html>>.

publicly funded schools, between faith schools and mainstream schools or between private schools and publicly funded schools. The evidence from this wider literature is somewhat mixed – the impact of competition can depend on the nature of the market – but many studies find positive impacts (McMillan 2004; Kranton 2003).

Other potentially relevant international reforms include those in health services markets, for example, where patients have been given much more freedom to select between public and private hospitals to receive publicly funded treatment. Again the impacts of such reforms appear to have been mixed, but there is evidence to suggest that the outcomes depend in part upon the provision of information. For example, where it is difficult to measure the quality associated with the service (whether health or education), competition may lead to greater competition on price rather than quality, resulting in a ‘commoditisation process’ (Propper, Burgess & Green 2004). The MySkills website, introduced in late 2012 and containing information on the student body and student outcomes at the provider level, may play an important role in this respect, as may the recent removal of price ceilings for VET fees in Victoria.

# Data and methods

## Methods

The approach taken by Skills Victoria (2012a) and its predecessors was to examine changes in enrolments, course choice patterns and other outcomes in Victoria in post-reform years (2010 and 2011) relative to a pre-reform base year (2008). In our analysis here we use data for the same post-reform years – reflecting the step-by-step introduction of the reforms between July 2009 and January 2011 – and the same base year. We also provide summary data along these lines; that is, comparing outcomes in Victoria in the post-reform years with those in Victoria in 2008, in appendix B.

Changes in outcomes over time in Victoria, however, could be due to the Victorian Training Guarantee reforms but they could also have been driven by a whole host of other factors, for example, continuing background trends in enrolments, cyclical movements in the economy, or contemporaneous policy changes in other parts of the education system or labour market. Changes in Victoria are also likely to have been driven at least in part by the national-level changes to the VET sector, for example, associated with the Productivity Places Program and the Compact with Young Australians. To isolate the impact of the Victoria-specific training guarantee reforms from these other factors we need to measure the changes in outcomes in Victoria against a defined counterfactual; that is, what would have happened in Victoria had the specific Victorian reforms not been introduced. A common approach to this kind of evaluation problem, in the absence of true experimental data, is the use of difference-in-differences methods (see Blundell & Costa-Dias 2008 and Angrist & Pischke 2009 for an overview and empirical examples from the literature). This is the approach we adopt here.

Difference-in-differences, as the name suggests, compares the changes in outcomes pre-reform to post-reform for those covered by the ‘treatment’ (in this case Victoria), with changes in outcomes over the same period for some (otherwise similar) comparison group not covered by the treatment. Under a standard set of assumptions, the changes over time for the comparison group provide the counterfactual (that is, they capture the effects of all the other changes that have been going on in the VET sector and the wider economy). Subtracting these changes from the changes observed for the treatment group provides us with the estimated impact of the reforms, that is, the *treatment effect* (specifically, the *average treatment effect on the treated*). In this case we compare changes in outcomes in Victoria with changes in outcomes in NSW: we use data from NSW to construct the counterfactual. An important condition for the estimation of causal impacts from difference-in-differences estimation is the common trends assumption. That is, in the absence of reforms in Victoria, changes in outcomes would reflect those from NSW. Although we cannot test the common trends assumption, the analysis presented in appendix A shows that prior to the reforms, there is no evidence to suggest that the outcomes of interest in Victoria and NSW were following different paths. To test the sensitivity of our results to the choice of NSW, we also present sensitivity analysis using the rest of Australia as an alternative counterfactual.

The difference-in-differences approach can be applied in a number of different ways and with varying degrees of sophistication. At its most simple, the difference-in-differences approach can be used to compare changes in aggregate outcomes in Victoria and NSW (for example, total number of enrolments, proportion of enrolments with private providers, proportion of enrolled students reporting a disability) with the difference in the differences of these aggregate outcomes, giving an

estimate of the treatment effect. This type of unconditional<sup>16</sup> difference-in-differences estimator is given by the following equation, where  $Y$  denotes the outcome of interest (for example, enrolments):

$$\text{Treatment Effect on } Y = (Y_{\text{Vic}, \text{post-reform}} - Y_{\text{Vic}, \text{pre-reform}}) - (Y_{\text{NSW}, \text{post-reform}} - Y_{\text{NSW}, \text{pre-reform}}) \quad (1)$$

We use this simple approach to address the first research question and to provide a first pass at the second (see below).

The difference-in-differences approach can also be used in a multivariate regression framework to examine the reform impacts on the outcomes of interest at the individual level, controlling for differences in the observable characteristics of individuals and controlling for any other differences between the pre-reform and post-reform periods (common to Victoria and NSW) and differences between Victoria and NSW (common to the pre-reform and post-reform periods). We use this conditional<sup>17</sup> difference-in-differences approach for our main set of results relating to the second research question.

The multivariate regression model can be written as:

$$y_i = \alpha + \beta X_i + \gamma \text{Vic}_i + \lambda \text{Post}_i + \delta \text{Vic} * \text{Post}_i + u_i. \quad (2)$$

Where  $y_i$  denotes the outcome of interest for individual  $i$  (which is either continuous, for example, income or is binary, for example, employment),  $\text{Vic}_i$  is a binary dummy taking the value 1 if the individual's VET was in Victoria,  $\text{Post}_i$  is a binary dummy taking the value 1 if the individual entered VET post-reform,  $X_i$  is a set of control variables at the individual level and  $u_i$  denotes unobserved influences at the individual level, and all other terms are defined as before. The parameter  $\delta$  gives the estimated impact of the reforms on the outcome. Individual control variables include study characteristics (provider type, field of study, course level and whether used recognised prior learning), socio-demographic variables (remoteness, SEIFA measure of regional disadvantage, gender, equity group status, age and highest prior qualification) and employment history (employment status prior to study, contract type, occupation and industry).

Ideally, we would estimate equation (2) for different equity groups (English as a second language, Indigenous and with a disability) to see how the reform impacts vary across equity groups; however, there are too few observations in our sample to generate robust results. Instead, we test for differences across equity groups by estimating equation (3) on a pooled sample:

$$y_i = \alpha + \dots + \phi_1 \text{Equity}_i + \phi_2 \text{Equity}_i * \text{Vic}_i + \phi_3 \text{Equity}_i * \text{Post}_i + \phi_4 \text{Vic} * \text{Post}_i * \text{Equity}_i + u_i. \quad (3)$$

The term  $\text{Equity}_i$  is a binary variable, coded 1 if graduate  $i$  is a member of the equity group and 0 otherwise. The coefficient of interest is that of the three-way interaction  $\phi_4$ , which represents the extra effect of the Victorian Training Guarantee on the given equity group, over and above the effect on the rest of the sample.

Note that these difference-in-differences approaches estimate the overall impact of the package of reforms on the outcomes, potentially working through a number of mechanisms, as discussed earlier in the report.

<sup>16</sup> So called because it is not conditioned (that is, it does not control for) on any other observable (or unobservable) factors.

<sup>17</sup> So called because it is conditioned (that is, it *does* control for) on other observable (and some unobservable) factors.

## Enrolment data

The National VET Provider Collection provides the best available dataset for examining enrolments before and after reforms by state.<sup>18</sup> National VET Provider Collection data are annually collected administrative data, which include detailed information on field of study, level of course, hours of study and limited provider and student characteristics from all publicly funded VET courses across Australia, including those from private providers. In other words, the National VET Provider Collection offers micro-level data on the population of publicly funded students enrolled in vocational education and training. As well as information on publicly funded courses, the National VET Provider Collection also includes information on all fee-for-service courses from domestic and overseas students delivered by public providers – TAFE (technical and further education) and ACE (adult and community education) providers.

A limitation of the National VET Provider Collection is that private providers are under no obligation to provide information on fee-for-service courses and hence there is limited information on such enrolments in the collection (although this issue applies to both Victoria and to NSW). This does not affect our analysis of publicly subsidised students, but it may introduce some uncertainty into how we interpret changes in *overall* enrolments including fee-for-service enrolments. Most notably, it may be a problem for estimating the impacts on overall enrolments for those aged 25 years and older, who have greater entitlements to publicly funded courses under the Victorian Training Guarantee. For this cohort, the extra entitlement under the training guarantee means that the impacts on overall enrolment may be over-estimated because a greater proportion of apparently additional enrolments will represent switching from fee-for-service to publicly funded, rather than a new enrolment.

When examining the effects of the Victorian Training Guarantee on enrolment, we distinguish between different types of enrolments, specifically between enrolments associated with an apprenticeship/traineeship and courses unrelated to an apprenticeship/traineeship.<sup>19</sup> We make this distinction because enrolments in the latter are also affected by the ability of students to find sponsoring employers. Among those not taken as part of an apprenticeship/traineeship, we distinguish between those that are government-funded, those that are domestic fee-for-service and those that are related to international student enrolments and other.<sup>20</sup> We consider enrolments across the board to get a better picture of the overall impacts, not just the impacts on publicly funded courses. To examine how the Victorian Training Guarantee affects enrolments across provider types, we classify providers as TAFE (including dual-sector universities), or ACE or private providers. To be consistent with the treatment of private providers in other reports, especially those by Skills Victoria (2012a), we treat all providers that are not TAFE or ACE as private providers. For the purpose of this study, we define enrolments as all new enrolments in the National VET Provider Collection in the pre-reform period (the calendar year 2008) and the post-reform periods (the calendar years 2010 and 2011, identified separately).

When undertaking the analysis, we also restrict the analysis to enrolments in Australian Qualifications Framework (AQF) level 1 courses and above and exclude lower-level courses, mainly to make the National VET Provider Collection data more tractable, but also because they typically are taken for

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<sup>18</sup> All analysis on enrolments is for course enrolments, including multiple enrolments for the same student. We do not estimate impacts for numbers of students enrolled.

<sup>19</sup> We cannot distinguish between apprentices and trainees in NCVER's National VET Provider Collection.

<sup>20</sup> Apprenticeships and traineeships are identified when students enrol in one or more modules associated with an apprenticeship or traineeship. The 'other' category comprises enrolments that are part of a sub-contract from another provider or similar.

different purposes from AQF courses, in particular, to facilitate further training at AQF level 1 and above.

## Student outcomes data

We use data from the Student Outcomes Survey to examine Victorian Training Guarantee impacts on post-VET outcomes. This survey arguably provides the best available data for examining post-VET outcomes in the first year. The sampling frame for the survey is those from the National VET Provider Collection who are enrolled in vocational education and training in the preceding calendar year and who have either completed the course or have completed at least one module of the course. Data are collected annually in the middle of the year, with samples alternating each year between ‘large’ (around 60 000 graduates with additional module completers) and ‘small’ (around 20 000 graduates with additional module completers). The Student Outcomes Survey includes details on qualifications obtained, current employment and occupation, earnings for those in employment (banded), student characteristics, and subjective measures of the quality of the VET provision received and of the extent to which graduates use the skills acquired in VET in their current employment. Our analysis of the survey data focuses on course completers, that is, graduates, because they are more likely to be affected by any changes in the quality of training resulting from the Victorian Training Guarantee.<sup>21</sup>

As well as restricting the analysis of post-study outcomes to graduates, we impose additional restrictions on the survey sample to better identify the impacts of the training guarantee. In particular, given that the latest available survey data relate to completers in 2011 (2012 cohort), we restrict the post-reform cohort to course completers (that is, graduates) who commenced in January or February 2010 to allow for at least a two-year window to examine outcomes from completion.<sup>22</sup> To put the pre-reform cohort on equal footing, we choose a cohort who commenced their course in January or February 2008. A two-year window for completion both before and after the Victorian Training Guarantee reforms is the longest possible with currently available survey data.<sup>23</sup> We also omit from the survey sample groups who may not be directly impacted by the reforms. Because there was contestability in apprenticeship and traineeships under the national user choice program prior to the reforms, we assume that the impact of the Victorian Training Guarantee on these groups is marginal and we exclude them from the analysis. We also restrict the analysis of outcomes to the post-reform cohorts who were clearly eligible for the Victorian Training Guarantee at the commencement of their

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<sup>21</sup> Note that because our sample is restricted to course completers who commence study in January or February 2010, the estimated impacts on labour market outcomes apply only to this group. Our analysis of outcomes for course completers in the Student Outcomes Survey should therefore be interpreted as describing outcomes for this particular sample of completers only, and will not necessarily be generalisable to the wider population of completers or potential completers. This is because the characteristics of completers in our sample may be different from the characteristics of completers who commence study at other times and/or the characteristics of non-completers. To the extent that these differences affect the outcomes from the Victorian Training Guarantee, we would expect estimates to differ.

<sup>22</sup> To identify course start date, which is not standard in the Student Outcomes Survey, NCVET extracted the information from the National VET Provider Collection using common student identifying information from the two datasets. Course completers in 2010 (2011 Student Outcomes Survey) are also included. Note that, following recent changes introduced by NCVET, there are now two versions of the variable in the survey that denotes course completion: the original self-reported variable and a new completion variable imputed from the National VET Provider Collection data. In defining our sample of completers here we use the former (the self-reported completion variable).

<sup>23</sup> Many students, however, will take longer than two years to complete. In time, as further data become available, researchers will be able to examine the impacts of the Victorian Training Guarantee reforms for this wider group of completers. For now, however, we must bear in mind that the particular group of completers we examine (January or February entrants completing within two years) may have different observed and unobserved characteristics from the wider population of completers or potential completers. Again, this means our results here may not necessarily generalise to the wider population.

course in January or February 2010: all 15 to 19-year-old graduates, 20 to 24-year-olds who completed a higher-level course and those aged 25 years and over who completed a diploma level and above course (graduate diploma, graduate certificate, advanced diploma and diploma).<sup>24</sup>

Limiting the survey sample to analyse the outcomes has implications for interpreting the results. First, it means that we have a limited sample size: we observe 1656 post-reform course completions and 1280 pre-reform course completions in Victoria, compared with around 1525 and 1538 in NSW (table 2). This means our estimates of reform impacts are imprecise (that is, subject to wide confidence intervals), which makes finding statistically significant impacts less likely than in otherwise similar analyses based on a greater number of observations. For the Indigenous group, the sample is too small to make any judgment on likely impacts, even if significant results are found, because we cannot rule out the likelihood that any result is driven by a few unrepresentative observations. Any results for the Indigenous group are reported for completeness, but we stop short of placing any interpretation on them.

The second implication of limiting the sample is that the results for outcomes may not be representative of all Victorian Training Guarantee impacts, especially for the group aged 25 years and over who had not received their full entitlement under the training guarantee in 2010. In 2010, the entitlement for this group was only for a diploma level and above course (graduate diploma, graduate certificate, advanced diploma and diploma). For the group aged 25 years and over we present results for completers of diploma level and above courses for completeness, but we do not put any emphasis on them because they are clearly not representative. While it is possible that restricting the analysis to completers who enrolled in January or February may also affect the representativeness of the estimated outcomes for 15 to 19-year-olds and 20 to 24-year-olds who complete a higher-level course, we find no strong evidence from analysing the National VET Provider Collection enrolment data. By and large, we find that the characteristics of students who enrol in January or February 2010 are much the same as those who enrol in March to December 2010, but that for both age cohorts the latter are around 20 percentage points more likely to have enrolled with a private provider.<sup>25</sup> If the Victorian Training Guarantee has had differential effects on the quality of provision between the two sectors, then results for 15 to 19-year-olds and 20 to 24-year-olds may not be representative.

## Equity groups

A key part of the analysis is examining how the effects of the Victorian Training Guarantee vary across equity groups. In this study, we can identify three equity groups using the National VET Provider Collection and Student Outcomes Survey datasets: *English as a second language*, *has a disability*, and *Indigenous* – all of which are self-reported. *A priori*, it is unclear how the Victorian Training Guarantee will impact upon the enrolment and outcomes of equity group members relative to others. On the one hand, to the extent to which access to a publicly funded course was capped and access was determined by providers, the pre-reform arrangements may have limited access for those from equity groups. Given the extra entitlement arrangements under the training guarantee, there may therefore be a positive effect on relative access. On the other hand, if equity group members are more costly to train on average, profit-maximising providers may be less willing in the absence of additional compensation to enrol equity group students than non-equity group students. Further, under competitive arrangements, where student outcomes are reported without adjustment for

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<sup>24</sup> Retrenched workers aged 25 years and over who have an entitlement under the Victorian Training Guarantee are not included in the sample because they cannot be identified in the data.

<sup>25</sup> Results are available from the authors upon request.

student characteristics, profit-maximising providers may have an additional incentive to skew enrolments towards those students they deem more likely to complete, to subsequently find employment, and so on, which may also impact on equity-group enrolments.<sup>26</sup>

**Table 2 Sample of course completers from the Student Outcomes Survey who are affected by the VTG**

Age cohort <sup>a</sup>	Pre-reform cohort <sup>b</sup>		Post-reform cohort <sup>c</sup>	
	Victoria <i>no.</i>	NSW <i>no.</i>	Victoria <i>no.</i>	NSW <i>no.</i>
<i>All</i>	1280	1538	1656	1525
15–19	578	798	709	740
20–24 who completed a higher level course	311	392	446	352
25 and older who completed a diploma course or above	391	348	501	433
<i>English as a second language</i>	239	362	343	313
15–19	91	139	123	93
20–24 who completed a higher-level course	62	98	101	83
25 and older who completed a diploma course or above	86	125	119	137
<i>Indigenous</i>	15	43	17	69
15–19	5	31	11	45
20–24 who completed a higher-level course	4	7	4	15
25 and older who completed a diploma course or above	6	5	2	9
<i>With a disability</i>	92	113	116	140
15–19	33	63	43	59
20–24 who completed a higher-level course	25	19	25	29
25 and older who completed a diploma course or above	34	31	48	52
<i>Not an equity group member</i>	927	1022	1184	1018
15–19	443	553	526	547
20–24 who completed a higher-level course	222	276	320	230
25 and older who completed a diploma course or above	262	193	338	241

Note: a Age cohorts refer to age at the commencement of the course. A high-level course for those aged 20–24 years is one that is at a higher level than their previous existing qualification. For those whose prior qualification is Year 12 completion, a higher-level course is assumed to be a certificate III and above.

b Pre-reform cohort is limited to those who commenced their course in January or February 2008 and were observed to complete by December 2009 (using information from the 2009 and 2010 Student Outcomes Surveys).

c The post-reform cohort is limited to those who commenced their course in January or February 2010 and were observed to have completed by December 2011 (using the information from the 2011 and 2012 Student Outcomes Surveys).

<sup>26</sup> For example, Karmel and Nguyen (2008) present evidence that completion rates are lower on average for those students reporting a disability than for those not reporting a disability.



# Results

In this section we present unconditional difference-in-differences results for enrolments and post-completion outcomes and conditional difference-in-differences results for graduate outcomes using multivariate analysis. For ease of presentation, we do not present the raw enrolment numbers upon which the unconditional difference-in-differences estimates are based in the main text. These are presented in appendix B; the raw enrolment numbers are important for identifying where the difference-in-differences effects originate – either from a rise in outcomes in NSW or a fall in Victoria. The raw enrolment numbers are also important for putting the results across different categories of enrolments into perspective.

Against all difference-in-differences estimates of student outcomes using the Students Outcomes Survey data, we present asterisks of significance, which measure whether or not the estimate is significantly different from zero. In general terms, the greater the number of asterisks the greater the confidence that the estimate is different from zero. No asterisk means that we cannot be confident that the estimate is greater than zero (so that we cannot rule out no effect of the Victorian Training Guarantee on the variable of interest with the data available). Given that the unconditional difference-in-differences estimates of *enrolment* effects using the National VET Provider Collection data are based on population data, there is no need to present measures of statistical significance. For the conditional difference-in-differences estimates, we also present robust standard errors, clustered on a student identifier to account for multiple completions by the same student. Standard errors are the average error associated with the difference-in-differences coefficients; the greater their magnitude relative to the size of the estimated coefficient, the lower the precision of the difference-in-differences coefficient estimates.

## Impacts on student enrolments

The estimated unconditional difference-in-differences impacts on total enrolments for 2010 and 2011 are presented in table 3. Recapping, unconditional estimates are calculated as the percentage-point growth in the outcome of interest in Victoria between 2008 and the post-reform period, minus the percentage-point growth in the outcome in NSW over the same period. To demonstrate, consider the derivation of the impact on total course enrolments in table 3 of 35 percentage points. In total, we observe around 314 000 and 361 000 VET enrolments in 2010 and 2011 respectively in Victoria (table B1, appendix B), which corresponds to 23% and 41% enrolment growth rates, respectively, relative to 2008. These estimates are around the same level of growth reported by Skills Victoria (2012a). Netting out growth under the counterfactual, which is growth rates in NSW over the same periods (a 12% growth rate and a 6% growth rate in 2010 and 2011 respectively), we estimate that, between 2008 and 2010, the Victorian Training Guarantee is associated with an 11-percentage-point higher growth rate in enrolments and between 2008 and 2011 a 35-percentage-point higher growth rate in enrolments (table 3). The higher growth rate between 2008 and 2011 from the Victorian Training Guarantee is partly due to the greater increase in enrolments among the cohort aged 25 years and more in 2011 that occurred with the expansion of their entitlement from diploma and above courses to any higher qualifications. Much of the increase associated with the Victorian Training Guarantee is in government-funded courses unrelated to apprenticeships and traineeships (an eight-percentage-point higher growth rate between 2008 and 2010 and a 50-percentage-point higher growth rate between 2008 and 2011).

**Table 3 Unconditional difference-in-differences estimates of the impact of the VTG on course enrolments at AQF level 1 or above, 2010 and 2011**

	Government-funded <sup>a</sup>		Domestic fee-for-service		International and other <sup>b</sup>		Trainees/apprentices		All	
	2010 <i>ppt.</i>	2011 <i>ppt.</i>	2010 <i>ppt.</i>	2011 <i>ppt.</i>	2010 <i>ppt.</i>	2011 <i>ppt.</i>	2010 <i>ppt.</i>	2011 <i>ppt.</i>	2010 <i>ppt.</i>	2011 <i>ppt.</i>
<i>TAFE<sup>c</sup></i>										
15–19	-6.8	9.4	-31.3	-62.0	-58.2	-64.0	16.7	-15.9	-3.4	-4.3
20–24	6.6	5.0	28.1	-14.9	-13.3	-33.6	23.1	-22.8	7.8	-8.2
25+	0.4	-13.5	26.5	-14.7	-4.2	-46.3	30.6	29.8	7.7	-7.3
Total	-0.2	-5.0	20.0	-21.2	-18.2	-45.2	22.4	-3.8	5.0	-6.7
<i>ACE</i>										
15–19	-2.4	60.9	-508.2	54.4	-	-	24.4	31.0	12.2	58.2
20–24	25.1	87.9	97.6	119.9	-	-	-10.9	7.6	20.4	69.0
25+	-19.5	32.0	64.9	85.0	-53.1	-100.9	1.9	49.0	-8.3	36.2
Total	-11.3	42.5	56.3	86.0	-48.5	-161.4	14.6	38.6	-1.8	43.1
<i>Private<sup>d</sup></i>										
15–19	437.0	1154.5	-	-	-	-	45.2	75.4	152.5	343.4
20–24	182.2	834.5	-	-	-	-	30.8	69.5	135.6	340.4
25+	-153.7	298.2	-	-	-	-	16.4	157.8	0.1	273.4
Total	-59.6	451.2	-	-	-	-	27.8	109.7	60.4	302.6
<i>All</i>										
15–19	13.8	63.6	-38.3	-63.8	-58.3	-64.5	26.0	12.9	14.4	36.5
20–24	33.2	78.1	21.6	-19.1	-13.3	-33.8	27.5	21.8	25.0	40.4
25+	-0.1	37.6	10.0	-28.9	-4.5	-46.7	21.7	94.7	5.6	32.9
<b>Total</b>	<b>8.1</b>	<b>49.6</b>	<b>6.3</b>	<b>-32.4</b>	<b>-18.2</b>	<b>-45.5</b>	<b>24.8</b>	<b>43.9</b>	<b>11.1</b>	<b>35.1</b>

Notes: a Commonwealth and state general purpose recurrent funding; Commonwealth specific purpose program funding; state specific purpose program funding.  
b International (excluding citizens of New Zealand who are treated as domestic full-fee paying) full-fee paying students and other revenue from sub-contracted, auspicing, partnership or similar arrangements.  
c TAFE includes TAFE institutes and VET provided through universities.  
d Includes training provided by private registered training organisations as well as training provided through private and publicly owned trading enterprises, schools and industry/professional associations. Note that information on enrolments with private providers in anything other than publicly funded courses is incomplete, most particularly with respect to fee-for-service enrolments.

Source: National VET Provider Collection.

Overall enrolment increases mask differences in impacts across provider types. There has been little growth in TAFE enrolments in Victoria between 2008 and 2011 (201 280) in 2008, rising to 233 644 in 2010, but then falling to 203 625 in 2011) (table B1, appendix B). The pattern of enrolments in NSW TAFE over the same period is broadly similar, although the drop between 2010 and 2011 was smaller in magnitude (table B2, appendix B). Taken together, the suggestion is of a small positive effect of the Victorian Training Guarantee on TAFE enrolments in Victoria in 2010, moving to a small negative effect in 2011. The small negative effect in 2011 from the training guarantee is in part driven by a 13.5-percentage-point lower growth rate in government-funded enrolments in courses unrelated to apprenticeships and traineeships for those aged 25 years and over, when compared with NSW (tables B1 and B2, appendix B).<sup>27</sup> Contestability for those aged 25 years and over may have been particularly strong because it is a segment of the market where private providers are most established.

<sup>27</sup> Some of the impact on Victorian TAFE enrolment is due to a fall in the number of international enrolments, which may be related more to international media reports of the mistreatment of Indian students in Melbourne rather than the impacts of the VTG.

For private providers, we estimate that the Victorian Training Guarantee is associated with a 60-percentage-point higher growth rate in enrolments between 2008 and 2010 and a 300-percentage-point higher growth rate in enrolments between 2008 and 2011 (but from a low base). Table 4 also shows that the Victorian Training Guarantee is associated with an increase in the number of private providers: a 36-percentage-point higher growth rate between 2008 and 2010 and a 48-percentage-point higher growth rate between 2008 and 2011, when compared with NSW. Overall, these results suggest that much of the extra demand from the national training entitlements and the Victorian Training Guarantee itself is being met by private providers in Victoria. However, the results also point to the apparently limited capacity of TAFE providers to respond to increased demand in the short run.

**Table 4 Numbers of providers with enrolments in AQF level 1 courses and above**

	Victoria			New South Wales			Difference-in-differences			
	2008	2010	2011	2008	2010	2011	2010		2011	
	no.	no.	no.	no.	no.	no.	no.	%	no.	%
TAFE	21	19	18	19	21	20	-4	-20.1	-4	-19.5
ACE	169	152	145	70	71	64	-18	-11.5	-18	-5.6
Private	216	340	389	312	380	414	56	35.6	71	47.4
<b>Total</b>	<b>406</b>	<b>511</b>	<b>552</b>	<b>401</b>	<b>472</b>	<b>498</b>	<b>34</b>	<b>8.2</b>	<b>49</b>	<b>11.8</b>

Source: National VET Provider Collection.

The suggestion is that private providers have been very good at responding in the short run to the increased demand associated with greater accessibility to publicly funded VET courses. However, an important issue is whether these courses are being delivered in areas and at levels where there is a particular public need. While we do not explicitly address the issue of the public benefits associated with different fields and levels of study here, we do examine the impacts on enrolments by broad field of education and level of qualification, in tables 6 and 7.

The results presented in table 5 show that the increased enrolments associated with the Victorian Training Guarantee are not limited to specific areas of study, but are widespread.<sup>28</sup> Most fields of education see substantially increased enrolment growth rates in Victoria due to the training guarantee, particularly between 2008 and 2011. The exceptions are the natural and physical sciences, information technology and education (where enrolments in Victoria fall but either don't change or increase in NSW; tables B3 and B4, appendix B). The varying enrolment impacts across fields of education are likely to reflect a combination of the greater freedom afforded to Victorian students in selecting their preferred course and differences in the supply responses of providers across fields of education, for example, with private providers likely to face different incentives and cost structures compared with TAFE providers.

Increases in enrolments by field of study are found to vary across age cohorts (table 6), especially between those aged 15–19 years and older cohorts. Generally speaking, the Victorian Training Guarantee is associated with greater impacts in the fields of engineering and related technologies and architecture and building. Unlike for those aged 15–19 years, for those aged 20 years and older, the training guarantee only gives greater freedom to choose among courses at a higher level. Therefore, compared with the effects for 15 to 19-year-olds, the Victorian Training Guarantee may encourage

<sup>28</sup> In an alternative version of table 5 we estimate VTG impacts on enrolments by ANZSCOs. As has been widely reported in the media, this ANZSCO-based table shows that the VTG is associated with over a 100% increase in training sports and personal service workers. This increase in enrolments is across both private providers and TAFEs, although the increase in private provider enrolments in this area is larger.

greater deepening of existing skills (upskilling) and less response to changing needs for different types of skills (reskilling) for those aged 20 years and older. Whether or not this leads to differences in employment outcomes across the age cohorts is tested in the following section.

**Table 5 Unconditional difference-in-differences estimates of the impact of the VTG on course enrolments at AQF level 1 or above, by field of study, 2010 and 2011**

	TAFE		ACE		Private		All	
	2010 <i>ppt.</i>	2011 <i>ppt.</i>	2010 <i>ppt.</i>	2011 <i>ppt.</i>	2010 <i>ppt.</i>	2011 <i>ppt.</i>	2010 <i>ppt.</i>	2011 <i>ppt.</i>
Natural and physical sciences	-14.5	-45.3	-	-	264.3	8,371.4	-20.6	-36.4
Information technology	-28.6	-53.9	35.2	36.9	-11.6	3.5	-27.1	-51.8
Engineering and related technologies	28.0	-3.8	-7.7	208.8	48.9	374.9	29.2	45.6
Architecture and building	113.6	52.9	-3,065.5	-1,628.6	-130.7	45.3	92.8	51.6
Agriculture, environmental and related	6.8	41.6	108.8	157.4	-226.8	-171.5	-5.7	32.8
Health	29.9	22.6	34.4	28.1	-157.5	333.2	26.9	43.1
Education	-55.5	-160.5	-50.3	48.1	-221.0	20.9	-60.9	-96.7
Management and commerce	-16.4	-31.7	-12.2	25.9	82.3	359.3	0.8	37.8
Society and culture	6.1	-15.1	65.3	109.3	141.6	492.2	34.4	76.7
Creative arts	7.0	8.1	-45.3	31.5	-22.9	100.8	5.6	11.9
Food, hospitality and personal services	-4.4	-23.4	0.8	17.8	82.9	234.6	7.4	16.7
Mixed field programmes	-22.8	25.5	-2.8	44.9	60.9	18.8	-21.3	25.7

Source: National VET Provider Collection.

**Table 6 Unconditional difference-in-differences estimates of the impact of the VTG on government-funded enrolments (excluding apprentices and trainees) at AQF level 1 or above by field of study, 2010 and 2011**

	Aged 15–19		Aged 20–24 who completed a higher-level course		Aged 25 and older who completed a diploma course or above		All	
	2010 %	2011 %	2010 %	2011 %	2010 %	2011 %	2010 %	2011 %
Natural and physical sciences	-41.9	-41.2	-31.0	-46.2	-24.2	-27.2	-30.4	-35.7
Information technology	-21.1	-33.2	-10.8	-30.4	-35.9	-69.0	-26.4	-49.3
Engineering and related technologies	33.3	36.1	60.3	52.4	22.3	59.9	31.2	53.7
Architecture and building	-3.9	-20.5	109.0	66.7	39.8	35.5	39.7	23.2
Agriculture, environmental and related	-17.3	14.2	31.6	43.4	17.6	35.0	14.5	32.9
Health	13.8	77.7	-11.7	21.9	-32.5	12.0	-21.1	23.7
Education	40.6	-80.7	-61.3	16.2	-140.1	-113.1	-136.2	-107.5
Management and commerce	-0.3	72.8	16.7	90.9	-7.4	29.9	-1.7	49.7
Society and culture	59.8	146.0	70.2	141.5	31.2	95.1	43.0	112.3
Creative arts	15.9	42.4	17.2	35.5	-9.7	-28.9	5.0	8.6
Food, hospitality and personal services	59.8	88.7	67.0	99.4	-1.9	22.4	26.4	53.0
Mixed field programmes	-17.3	97.6	-5.5	114.0	-7.6	46.1	-11.6	62.2

Source: National VET Provider Collection.

**Table 7 Unconditional difference-in-differences estimates of the impact of the VTG on course enrolments at AQF level 1 or above, by course level, 2010 and 2011**

	Government funded <sup>a</sup>		Domestic fee-for-service		International and other <sup>b</sup>		Trainees/apprentices		All	
	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011
	<i>ppt.</i>	<i>ppt.</i>	<i>ppt.</i>	<i>ppt.</i>	<i>ppt.</i>	<i>ppt.</i>	<i>ppt.</i>	<i>ppt.</i>	<i>ppt.</i>	<i>ppt.</i>
<i>Diploma or above<sup>c</sup></i>										
15–19	18.8	27.6	-121.7	-107.4	-24.0	-36.8	-333.6	-266.4	11.3	19.3
20–24	8.6	19.3	-68.6	-107.4	-26.7	-22.3	-213.2	5.9	-5.6	1.8
25+	-31.0	-14.9	-26.3	-108.7	-5.4	-16.9	-27.9	757.4	-27.1	-11.5
<b>Total</b>	<b>-10.3</b>	<b>2.6</b>	<b>-42.1</b>	<b>-111.3</b>	<b>-18.8</b>	<b>-23.2</b>	<b>-139.5</b>	<b>352.0</b>	<b>-14.1</b>	<b>-2.6</b>
<i>Certificate IV</i>										
15–19	0.9	75.4	-1.1	-69.6	-41.2	-112.8	82.6	58.7	5.3	58.9
20–24	35.5	142.4	14.8	-31.4	-16.1	-65.0	39.1	115.3	28.5	90.0
25+	18.8	59.0	11.9	-2.4	-47.7	-107.3	51.7	243.7	11.9	47.2
<b>Total</b>	<b>18.2</b>	<b>76.0</b>	<b>12.1</b>	<b>-8.9</b>	<b>-34.7</b>	<b>-91.8</b>	<b>54.2</b>	<b>181.8</b>	<b>14.1</b>	<b>56.5</b>
<i>Certificate III</i>										
15–19	68.4	145.5	32.8	-16.2	-107.7	-67.1	21.6	8.0	28.6	35.6
20–24	70.1	138.8	29.8	3.4	8.0	-34.2	32.9	13.3	40.7	47.7
25+	-0.4	71.7	11.7	-8.6	17.9	-57.3	21.5	58.4	9.9	55.8
<b>Total</b>	<b>18.5</b>	<b>90.5</b>	<b>17.1</b>	<b>-7.4</b>	<b>-7.1</b>	<b>-51.3</b>	<b>24.5</b>	<b>26.2</b>	<b>20.7</b>	<b>49.2</b>
<i>Certificate II</i>										
15–19	25.3	79.7	-139.3	-159.4	-179.2	-127.3	50.5	24.7	8.5	42.1
20–24	55.7	59.7	7.7	-50.9	-18.3	-62.1	-16.4	-19.8	36.3	35.3
25+	7.2	16.9	0.0	-78.0	-27.7	-77.6	-24.7	13.1	15.7	21.2
<b>Total</b>	<b>19.0</b>	<b>38.5</b>	<b>-25.9</b>	<b>-90.1</b>	<b>-47.4</b>	<b>-80.4</b>	<b>9.6</b>	<b>10.4</b>	<b>16.7</b>	<b>28.3</b>
<i>Certificate I</i>										
15–19	-29.7	38.5	150.5	123.5	16.1	-78.4	-	-	-6.6	45.8
20–24	-6.1	67.9	87.1	37.9	227.0	-112.4	-	-	18.5	58.1
25+	-8.7	39.3	7.0	-25.3	120.2	-97.3	-	-	-1.6	27.1
<b>Total</b>	<b>-9.2</b>	<b>47.1</b>	<b>36.5</b>	<b>2.2</b>	<b>99.4</b>	<b>-102.8</b>	<b>-</b>	<b>-</b>	<b>2.4</b>	<b>37.3</b>

Notes: a Commonwealth and state general purpose recurrent funding; Commonwealth specific purpose program funding; state specific purpose program funding.

b International (excluding citizens of New Zealand who are treated as domestic full-fee paying) full-fee paying students and other revenue from sub-contracted, auspicing, partnership or similar arrangements.

c Including graduate diploma, graduate certificate, advanced diploma and diploma.

In 2011, following the full implementation of the Victorian Training Guarantee reforms, we estimate that the increase in the enrolments associated with this initiative is greater for qualifications at certificate levels III and IV than for lower-level qualifications at levels I and II (table 7). The greater impacts on level III and IV courses are driven mainly by the impact on the 20–24 years and 25 years and over age groups subject to the upskilling restrictions. However, we find negative effects for enrolments in diploma-level (including graduate diploma, graduate certificate, advanced diploma and diploma) courses in 2010 and 2011, driven mainly by lower growth in diploma-level enrolments in the 25 years and over age group in Victoria compared with NSW (see tables B5 and B6, appendix B). In 2011, the entitlement to a publicly funded course under the Victorian Training Guarantee was extended from diploma-level courses to any higher than existing qualification for the 25 years and over group, which appears to have led to a shift towards lower-level enrolments, especially at certificates III and IV. This underlines the preference for lower-level courses among older cohorts, especially for those with no or little post-school education. A point of note is that the Victorian Training Guarantee is also associated with a negative effect on diploma-level enrolments among those age 25 years and over in 2010, when much of the entitlement for this age group was restricted to

diploma-level courses. A possible explanation is that many students in this age group in Victoria, who may have otherwise have enrolled in a diploma-level course in 2010, delayed their enrolment to 2011 to take advantage of greater freedom of choice.<sup>29</sup> An alternative explanation is that the Victorian Training Guarantee increased the cost of diploma-level courses in Victoria relative to NSW. As part of the training guarantee, providers in Victoria were given greater flexibility to set fees within a restricted range, especially for diploma-level courses (Essential Services Commission 2011) and restrictions were introduced to student fee concession/fee exemptions entitlements in Victoria with the introduction of deferred loans for diploma courses under VET FEE-HELP.

## Enrolment impacts by equity group

The results presented in table 8 suggest that the Victorian Training Guarantee drove higher enrolment growth rates in 2011 for all equity groups except Indigenous students. (The underlying data for Victoria and NSW are presented in tables B7 and B8.) We find that the result for Indigenous enrolments is much the same when we use enrolment growth in the rest of Australia as an alternative counterfactual to enrolment growth in NSW, which suggests that this effect is indeed driven by more modest enrolment growth in Victoria. For example, between 2008 and 2011, we estimate a 15% increase in the number of Indigenous enrolments in Victoria, compared with enrolment increases in excess of 50% for those with a disability and for those from non-English speaking backgrounds for courses that are government funded (table B7, appendix B).

However, for people with a disability and for people from non-English speaking backgrounds (that is, for whom English is a second language), the higher enrolment growth rates associated with the Victorian Training Guarantee between 2008 and 2011 are not as great as those estimated for the rest of the population. There may be a number of explanations for the smaller effects of the training guarantee on enrolments among equity group members compared with non-equity group members. First, the move to a funding model based on student demand may change the incentives to enrol disadvantaged learners. Despite the obligations of public and private providers to accommodate disadvantaged learners under antidiscrimination legislation and the access and equity principles of the Australian Quality Training Framework (2010), the funding for any such provision in 2010 and 2011 was ambiguous. Under the student contact hour funding model, both public and private providers receive an extra fee loading to support disadvantaged learners, but only for a select group – Indigenous, those in the corrections system and early school leavers aged less than 20 years. In 2010 and 2011 extra funding was available to public providers only for providing the ‘full range of training services’, but whether this funding was for supporting disadvantaged learners or for providing other non-market services, such training in thin markets, was uncertain. Given the uncertainty surrounding who pays for the cost of services to equity group members and the quality of the service, it is possible that the competitive funding model may have made equity group members less willing to enrol and/or providers less willing to offer places to learners with special needs. Second, these groups may have had priority access to education and training in the past, so that any extra entitlement under the Victorian Training Guarantee may have had less of an effect. Finally, these may reflect short-term effects only because equity group members may have had difficulty accessing information on changes to entitlements and/or because it takes time for private providers to develop the capabilities to meet their special learning needs.

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<sup>29</sup> The extension of the entitlement to ‘higher-level’ courses in 2011 for those 25 years and over was part of the initial design to stagger the rollout of the VTG, as made explicit under the Securing Jobs for Your Future, launched in August 2008. Therefore, there was adequate time prior to the implementation of the reforms for the group aged 25 years and over to decide when to enrol.

**Table 8 Unconditional difference-in-differences estimates of the impact of the VTG on course enrolments at AQF level 1 or above by equity group, 2010 and 2011**

	Government-funded <sup>a</sup>		Domestic fee-for-service		International and other <sup>b</sup>		Trainees/apprentices		All	
	2010 <i>ppt.</i>	2011 <i>ppt.</i>	2010 <i>ppt.</i>	2011 <i>ppt.</i>	2010 <i>ppt.</i>	2011 <i>ppt.</i>	2010 <i>ppt.</i>	2011 <i>ppt.</i>	2010 <i>ppt.</i>	2011 <i>ppt.</i>
<i>English as a second language</i>										
15–19	23.2	62.7	-79.5	-78.9	-62.5	-64.0	36.1	39.5	10.0	26.2
20–24	27.4	58.4	39.1	-17.9	-38.1	-53.5	4.1	11.9	6.8	1.2
25+	5.9	49.8	-2.9	-56.3	-41.5	-81.5	13.5	86.2	4.7	29.4
<b>Total</b>	<b>11.5</b>	<b>52.9</b>	<b>-1.8</b>	<b>-50.1</b>	<b>-44.9</b>	<b>-67.5</b>	<b>16.2</b>	<b>59.4</b>	<b>5.9</b>	<b>23.1</b>
<i>Indigenous</i>										
15–19	-12.9	-3.9	41.7	14.0	-	-	15.3	9.5	-3.4	-0.9
20–24	-20.6	-9.8	-2.7	-54.9	-	-	-1.7	47.8	-15.0	-8.6
25+	-23.6	-2.2	-56.1	-97.8	-	-	43.8	142.3	-20.9	-2.3
<b>Total</b>	<b>-19.8</b>	<b>-3.5</b>	<b>-26.3</b>	<b>-63.1</b>	<b>-</b>	<b>-</b>	<b>20.0</b>	<b>56.7</b>	<b>-14.9</b>	<b>-2.9</b>
<i>With a disability</i>										
15–19	-16.2	28.5	19.0	-65.5	9.2	-46.2	38.1	2.6	-4.4	20.3
20–24	-0.6	39.7	-74.7	-74.3	39.7	-8.1	58.3	34.2	3.7	31.5
25+	-10.5	31.3	-23.4	-42.2	55.4	-72.2	31.5	120.9	-5.9	31.9
<b>Total</b>	<b>-9.0</b>	<b>33.2</b>	<b>-23.9</b>	<b>-50.4</b>	<b>34.3</b>	<b>-41.2</b>	<b>41.0</b>	<b>51.1</b>	<b>-3.6</b>	<b>30.1</b>
<i>Not from an equity group</i>										
15–19	12.1	65.7	-40.7	-61.4	-46.8	-80.8	28.6	13.9	17.0	41.0
20–24	39.0	90.2	-15.5	-48.9	-28.3	-63.3	34.9	27.4	33.3	58.2
25+	3.7	39.8	-25.9	-66.4	18.2	-63.5	24.5	105.1	6.5	37.8
<b>Total</b>	<b>11.6</b>	<b>54.6</b>	<b>-27.7</b>	<b>-65.9</b>	<b>-16.8</b>	<b>-69.5</b>	<b>28.7</b>	<b>46.0</b>	<b>14.5</b>	<b>42.6</b>

Notes: a Commonwealth and state general purpose recurrent funding; Commonwealth specific purpose program funding; state specific purpose program funding.

b International (excluding citizens of New Zealand who are treated as domestic full-fee paying) full-fee paying students and other revenue from sub-contracted, auspicing, partnership or similar arrangements.

Source: National VET Provider Collection.

## Impacts on student outcomes

Unconditional difference-in-differences estimates of the Victorian Training Guarantee reforms for VET graduates using the Student Outcomes Survey are presented in table 9. Recall that the analysis for post-course outcomes is restricted to graduates who enrolled in January or February 2008 and 2010, and for the cohorts aged 20–24 years and 25 years and over the outcomes are for higher-level qualifications and diploma qualifications respectively. These unconditional difference-in-differences results give us a first pass at estimating the reform impacts on outcomes, but do not control for differences in the composition of the students who complete as a result of the VTG.

From a quick glance at the results, it is evident that there is only a handful of statistically significant results. The lack of statistical significance is in part due to the small sample size, which increases the imprecision of the results. In response, we take a cautious approach when interpreting the results and focus the discussion on results with at least 10% significance. As discussed above, we present results for the group aged 25 years and over who enrolled in a diploma course for completeness, but do not discuss their estimated impacts because they are not likely to represent the full effects of the Victorian Training Guarantee for this cohort.

From the significant unconditional difference-in-differences effects presented in table 9, it appears that the Victorian Training Guarantee has had a positive effect on the outcomes of 15 to 19-year-olds. Unconditional estimates point to a four-percentage-point increased chance of full-time employment, which is due to an estimated ten-percentage-point improvement in the rate of transition (from out of work and part-time work) to full-time work following course completion under the training guarantee. Positive employment outcomes for the 15 to 19-year-olds from the Victorian Training Guarantee are also accompanied by a 0.1 point higher level of overall course satisfaction (on a 5-point scale) and a 12-percentage-point increase in the chance of finding ongoing employment (defined as employment with holiday and sick leave).

In contrast, we find no significant positive effects associated with the Victorian Training Guarantee for those aged 20–24 years. The only significant effect is found to be a 16-percentage-point lower chance of finding a job at a higher skill level (at ASCO 6-digit level) than held prior to training (for those employed prior to enrolment). Possible explanations for the differing effects between those aged 15–19 and those aged 20–24 years are explored in the multivariate analysis below.



**Table 9 Unconditional difference-in-differences estimates of the impact of the VTG on course outcomes by age cohort**

	15–19 years	20–24 years who completed a higher level course	25 years and older who completed a diploma course or above	All
In study (%)	3.23	-2.36	-2.95	0.28
Proportion in study who are enrolled in a higher-level course (%)	1.33	-2.46	-10.2	-2.86
Mean satisfaction with course index (1 totally dissatisfied – 5 totally satisfied) <sup>a</sup>				
Teaching	0.03	-0.06	-0.03	-0.01
Assessment	0.04	-0.10	-0.06	-0.03
Learning experiences	0.12	0.02	-0.02	0.06
Overall course satisfaction	0.10	-0.17	-0.03	-0.00
Employment status (%)				
Employed full-time	3.73	-1.79	-9.08	-2.30
Employed part-time, in study	-0.75	3.70	1.30	1.36
Employed part-time, not in study	0.19	2.24	4.34	2.49
Not employed, in study	3.70	-0.77	-1.71	1.21
Not employed, not in study	-6.87*	-3.40	5.15	-2.75
Ongoing employment (%) <sup>b</sup>	12.36**	-8.91	-20.24***	-
Rates of transition to full-time work following training (%) <sup>c</sup>				
Total	10.1*	3.98	-3.40	5.38
Out of work to full-time	-2.58	1.23	6.50	-0.064
Part-time to full-time	12.6**	2.75	-9.90	5.45
Change industry after training (%)	-0.83	-0.39	14.28**	-
Change in occupation after training (%)	6.31	1.90	8.35	-
Move to a more skilled job after training (%)	8.38	-16.46**	12.83*	-
Relevance of training to your job (1 not relevant – 4 highly relevant) <sup>d</sup>	-0.05	-0.12	0.02	-0.09
Match between occupation and training (%) <sup>e</sup>				
Same occupation as training course	-5.67	-7.26	9.35	-1.89
Different occupation – training is relevant	0.34	2.63	-13.8*	-4.13
Different occupation – training isn't relevant	5.10	4.21	6.04	6.27
Different occupation - relevance is unknown	0.23	0.42	-1.56	-0.24

Notes: \*\*\*significant at 1%, \*\*significant at 5% \*significant at 10%.

Fee-for-service students are excluded, as are apprentices and trainees.

a The domains of teaching, assessment and learning experience are a weighted index of individual responses to multiple questions generated from simple averages. Overall satisfaction with the quality of the course is a separate question. All questions on quality, including questions in the three domains, are positively worded statements and respondents are asked to judge on a 5-point scale the degree to which they agree with the statement, where 1 is strongly disagree and five strongly agree. All not applicable responses are coded as missing.

b Ongoing employment is defined as having both holiday and sick leave entitlements.

c Estimated on the sample of those who are either out of work (did not have a paid job) or part-time in the six months preceding training.

d Original categories are reverse-coded.

e This is only calculated among cases for which we observe the post-training occupation.

## Conditional difference-in-differences

We use a multivariate regression difference-in-differences approach to better identify the impacts of the Victorian Training Guarantee from any effects due to changes in the characteristics of students over time. Difference-in-differences regression models (equation [2]) are estimated for eight different outcome variables. In estimating the effects of the training guarantee on finding a higher-level job, the sample is restricted to those in employment prior to study. For each outcome, we estimate a separate model for each group of graduates: all 15 to 19-year-olds, 20 to 24-year-olds who complete a higher qualification, those aged 25 years and over who complete diploma and above level and all graduates. To estimate whether the impacts vary across equity groups, we estimate models on the entire sample, but with three-way interaction terms to test whether the equity group outcomes are different from those for the rest of the sample (equation [3]).

**Table 10 Difference-in-differences regression estimates of VTG impacts on graduate outcomes, by age cohort, coefficient (robust standard error)**

Post-graduation outcome	15–19 years	20–24 years who completed a higher level course	25 years and older who completed a diploma course or above	All
In study (1 = enrolled in study, 0 otherwise)	0.050 (0.038)	0.059 (0.052)	-0.017 (0.048)	0.028 (0.026)
Overall course satisfaction (1 = satisfied/ highly satisfied, 0 otherwise)	0.040* (0.024)	0.002 (0.032)	0.030 (0.033)	0.018 (0.016)
Employed (1 = employed, 0 otherwise)	0.015 (0.032)	-0.018 (0.040)	-0.016 (0.035)	-0.002 (0.020)
Full-time employed (1 = FT employed, 0 otherwise)	0.054* (0.028)	-0.052 (0.041)	-0.023 (0.036)	-0.005 (0.020)
Employed on an ongoing basis (1 = employment with paid holiday and sick leave, 0 otherwise)	0.064 (0.041)	-0.053 (0.055)	-0.005 (0.041)	-0.007 (0.026)
Attained a higher-skilled job than before training (1 = higher skilled, 0 otherwise)	0.077 (0.051)	-0.106* (0.059)	0.035 (0.042)	-0.003 (0.029)
Average annual income after training for those employed full-time (\$)	-7.789 (2423.641)	-2180.134 (3026.760)	1213.607 (2133.549)	468.445 (1406.789)
Relevance of training to your job (1 = relevant/ highly relevant, 0 otherwise)	-0.047 (0.048)	0.027 (0.058)	-0.039 (0.043)	-0.024 (0.028)

Notes: \*\*\*significant at 1%, \*\*significant at 5% \*significant at 10%.

For binary outcomes (all outcomes except income) coefficients are interpretable as the percentage-point change in the probability of the outcome as a result of the VTG. For income, the coefficients are interpretable as the dollar impact on income of the VTG. Fee-for-service students are excluded, as are apprentices and trainees.

The key results from this exercise, the estimated difference-in-differences coefficients ( $\delta$  from equation [2]) and their associated standard errors, are presented in table 10 (see appendix C for a full set of results with all control variables). The estimated difference-in-differences coefficients represent the effects of the Victorian Training Guarantee on graduates in our sample six months after graduating, assuming that, in the absence of the training guarantee, the outcomes for these graduates would have followed the same trends as those experienced for graduates in NSW who enrol between January and February 2008 and January and February 2010. Each difference-in-differences coefficient is measured in the same units as the dependent variable, which means for income, the only continuous outcome variable, the impact of the Victorian Training Guarantee is measured in dollars per annum compared with the situation had the training guarantee not been implemented. For all

other variables, the impacts are measured as percentage-point differences, relative to the Victorian Training Guarantee not having been implemented.

As for the unconditional estimates, the results are imprecisely estimated, with only a handful of statistically significant results. To be cautious, we focus the discussion on the significant results. Consistent with the unconditional results presented in table 9, conditional results for 15 to 19-year-old graduates are generally positive, with the Victorian Training Guarantee found to be significantly associated with a four-percentage-point higher chance of being satisfied with the course and a five-percentage-point higher chance of being in full-time employment in the year after course completion.

Also consistent with the unconditional estimates, we find that the Victorian Training Guarantee appears to have less positive effects on those 20 to 24-year-olds who completed a higher qualification compared with the 15 to 19-year-olds. In particular, we estimate that for 20 to 24-year-olds who completed a higher-level qualification, the Victorian Training Guarantee is associated with an 11-percentage-point lower chance of finding a higher-skilled job after training, which may be because they are more likely to deepen their skills in their existing occupation than retrain. No other significant results are found for 20 to 24-year-old graduates of a higher course and, by and large, the magnitude and direction of the estimated impacts are less positive.

A possible reason why the Victorian Training Guarantee may have less positive results for 20 to 24-year-olds is the requirement to enrol in a higher-level course to access a publicly subsidised course. For 20 to 24-year-old graduates, the training guarantee offers greater freedom to select the preferred provider and course, but only if the course is at a higher level than their highest previous qualification. We find (using three-way interaction terms to test for difference in the effects by past education) that, among 20 to 24-year-olds with a certificate II or below, who may not be affected by the upskilling requirement, the estimated employment benefits from the Victorian Training Guarantee are similar to those estimated for 15 to 19-year-olds. In contrast, for those who hold at least a certificate level III qualification and whose course choices are more constrained by upskilling, the effects of the training guarantee are significantly less.<sup>30</sup> The differences in the effects of the training guarantee by previous qualification suggest that the upskilling requirements may reduce the short-term benefits that would be otherwise available under the training guarantee.

Upskilling requirements may reduce the post-training benefits of the training guarantee, because, for those who already have a certificate III or above, it may create barriers to retraining in areas outside their current expertise and encourage more skill deepening instead. This may occur if there are prerequisite skills or training required at the certificate III level or below to gain entry to (and/or complete) higher courses. For those with at least a certificate III, if their past highest qualification is not in an area of demand, then further training in the same area may do little to improve their outcomes. In other words, the Victorian Training Guarantee may make it easier to repeat the past mistakes in course selection that are being encouraged by upskilling requirements. This effect would be exacerbated if the completion rates for certificate III and above qualification holders are lower for those who retrain than for those who deepen their skills. This interpretation is consistent with the unconditional difference-in-differences results presented in table 11, which show that for 20 to 24-year-old graduates whose highest prior qualification is at certificate level III and above, the training guarantee is associated with a 12-percentage-point *lower* chance that their course is related to a skill shortage. In contrast, for 20 to 24-year-olds whose highest prior qualification is less than a

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<sup>30</sup> Results are available upon request from the authors.

certificate III, the training guarantee is associated with a 3.8-percentage-point *higher* chance that their course is related to a skill shortage.

**Table 11 Proportion of graduates in skill-shortage areas (4-digit ANZSCO) by pre-training education level**

Highest education level before training	Pre-reform cohort <sup>a</sup>		Post-reform cohort <sup>b</sup>		Difference-in-differences
	Victoria	NSW	Victoria	NSW	
15–19					
Less than certificate III	5.686	6.63	3.535	1.511	2.967
Certificate III and above	19.703	14.27	2.129	0.951	-4.255
All	7.922	7.202	3.32	1.425	1.175
20–24					
Less than certificate III	10.794	9.551	7.975	2.887	3.844
Certificate III and above	20.701	16.433	0.029	7.663	-11.931*
All	13.55	12.331	4.636	4.885	-1.468
25+					
Less than certificate III	12.309	4.258	0.57	3.762	-11.243**
Certificate III and above	13.183	8.472	1.197	9.469	-12.983***
All	14.513	7.674	1.014	8.901	-14.727***

Notes: Skill shortages are identified using state-based skill shortage lists. Pre-reform lists are from 2008 and post-reform lists are from 2010.

a Pre-reform cohort is limited to those who commence their course in January to February 2008 and were observed to complete by December 2009 (using information from the 2009 and 2010 Student Outcome Surveys).

b The post-reform cohort is limited to those who commence their course in January to February 2010 and are observed to have completed by December 2011 (using the information from the 2011 and 2012 Student Outcome Surveys). The full set of results is available in appendix C.

### *Differences in results by equity group*

To examine whether the Victorian Training Guarantee affects equity group members differently, we estimated impacts on graduate outcomes across equity groups: English as a second language, Indigenous and with a disability. The results presented in table 12 are the estimated coefficients for the three-way interaction terms ( $\phi_4$ ) in equation (3) and represent the average effect of the training guarantee on members of the given equity group compared with the effect on members outside the equity group. For example, the 0.049 coefficient for ‘in study’ means for those from a non-English speaking background, on average, the training guarantee is estimated to increase their chances of being in study by five percentage points more than for the rest of the population.

As with the results presented in table 10, the estimates presented in table 12 are imprecise, with only a few statistically significant results for members of the Indigenous group. For the Indigenous group, the results are based on a sample size of 32 observations in Victoria (see table C12, appendix C), 15 pre-reform and 17 post-reform, which is too small a number of generate reliable results. Although the results for Indigenous are significant, we cannot rule out the possibility that the effects are driven solely by a small number of unrepresentative observations. Another reason to discount the results for the Indigenous group is that employment status in the Student Outcomes Survey does not distinguish between open market employment and engagement in Indigenous employment programs (especially engagement in the Community Development Employment Program).

For the other two equity groups, the results are statistically insignificant, which means that we cannot conclude with any certainty that there have been differential impacts on post-study outcomes.

**Table 12 Difference-in-differences regression estimates of VTG impacts on graduate outcomes, by disadvantaged group, coefficient (robust standard error)**

Post-graduation outcome	English as a second language	Indigenous	With a disability
In study (1 = enrolled in study, 0 otherwise)	0.049 (0.062)	-0.320* (0.193)	-0.066 (0.096)
Overall course satisfaction (1 = satisfied/highly satisfied, 0 otherwise)	0.037 (0.039)	0.007 (0.124)	0.072 (0.062)
Employed (1 = employed, 0 otherwise)	-0.069 (0.052)	-0.372** (0.174)	0.006 (0.076)
Full-time employed (1 = FT employed, 0 otherwise)	-0.009 (0.045)	0.249 (0.180)	-0.016 (0.064)
Employed on an ongoing basis (1 = employment with paid holiday and sick leave, 0 otherwise)	0.090 (0.069)	0.307 (0.224)	0.013 (0.109)
Attained a higher-skilled job than before training (1 = higher skilled, 0 otherwise)	0.009 (0.073)	0.309 (0.289)	0.062 (0.150)
Average annual income after training for those employed full time (\$)	-2 346.347 (3 857.797)	30 278.473** (12 449.197)	-8 866.477 (6 029.860)
Relevance of training to your job (1 = relevant/highly relevant, 0 otherwise)	0.080 (0.075)	0.210 (0.252)	0.088 (0.127)

Notes: \*\*\*significant at 1%, \*\*significant at 5% \*significant at 10%.

For binary outcomes (all outcomes except income) coefficients are interpretable as the percentage-point change in the probability of the outcome as a result of the VTG. For income, the coefficients are interpretable as the dollar impact on income of the VTG. Fee-for-service students are excluded, as are apprentices and trainees.

## Sensitivity analysis: using rest of Australia to generate the counterfactual

A key assumption underlying the validity of the conditional difference-in-differences estimates is the legitimacy of the use of New South Wales to generate counterfactual outcomes from which the impacts of the Victorian Training Guarantee can be estimated. If there is a divergence in outcomes between the two states over the period of analysis (2008–10) due to differences in trends unrelated to the training guarantee, then the estimated effects will be wrongly attributed to the Victorian Training Guarantee. An alternative approach to selecting a particular state and a comparator would be to use the rest of Australia instead. From pre-reform trend information presented in appendix A, in the main, we do not observe large diverging trends in outcomes between Victoria, NSW and the rest of Australia, which suggests that the particular selection of the comparison state(s) may not be particularly important. However, there are a few outcomes where there are diverging trends between Victoria and NSW, which suggests that the rest of Australia may make for a better counterfactual. For example, the proportion of graduates aged 25 years and over who are satisfied with their course (figure A15, appendix A) and the proportion of graduates aged 20–24 years who report that their training is relevant or highly relevant (figure A17, appendix A).

**Table 13 Difference-in-differences regression estimates of VTG impacts on graduate outcomes using rest of Australia as the comparison group, by age cohort, coefficient (robust standard error)**

Post-graduation outcome	15–19 years	20–24 years who completed a higher level course	25 years and older who completed a diploma course or above	All
In study (1 = enrolled in study, 0 otherwise)	0.053 (0.033)	-0.004 (0.048)	-0.026 (0.043)	0.010 (0.023)
Overall course satisfaction (1 = satisfied/ highly satisfied, 0 otherwise)	0.008 (0.021)	-0.016 (0.032)	-0.012 (0.033)	-0.002 (0.015)
Employed (1 = employed, 0 otherwise)	-0.014 (0.027)	0.001 (0.036)	-0.010 (0.030)	-0.015 (0.018)
Full-time employed (1 = FT employed, 0 otherwise)	0.046* (0.024)	-0.039 (0.041)	-0.004 (0.034)	-0.004 (0.018)
Employed on an ongoing basis (1 = employment with paid holiday and sick leave, 0 otherwise)	0.081** (0.034)	-0.084 (0.052)	-0.025 (0.037)	-0.003 (0.023)
Attained a higher-skilled job than before training (1 = higher-skilled, 0 otherwise)	0.055 (0.042)	-0.066 (0.054)	0.074** (0.036)	0.013 (0.025)
Average annual income after training for those employed full-time (\$)	1127.565 (2091.083)	-3411.859 (2708.389)	1755.749 (2018.931)	341.263 (1275.775)
Relevance of training to your job (1 = relevant/ highly relevant, 0 otherwise)	0.046 (0.040)	0.019 (0.054)	0.062* (0.036)	0.037 (0.024)

Notes: \*\*\*significant at 1%, \*\*significant at 5% \*significant at 10%.

For binary outcomes (all outcomes except income) coefficients are interpretable as the percentage-point change in the probability of the outcome as a result of the VTG. For income, the coefficients are interpretable as the dollar impact on income of the VTG. Fee-for-service students are excluded, as are apprentices and trainees.

To test how sensitive the results are to the choice of NSW as a comparison state, we re-estimate the results presented in table 10, with the rest of Australia used to generate counterfactual outcomes. Results from this sensitivity analysis (table 13) show that, on the whole, the key findings discussed above are robust to the choice of comparison group. Using the rest of Australia instead of NSW as a comparator makes very little difference to the positive estimated effect of the Victorian Training Guarantee on the chances of 15 to 19-year-olds finding full-time employment, ongoing employment and higher-skilled employment after training. As for impacts using NSW as a comparator, using the rest of Australia is also found to produce less positive results for those aged 20–24 years. One outcome where the choice of comparator does make a difference is course satisfaction for graduates aged 15–19 years. Using the rest of Australia as a comparator, the positive effect of the Victorian Training Guarantee disappears. However, from pre-reform course satisfaction trends for 15 to 19-year-olds (figure A13, appendix A), it appears that there are diverging trends in Victoria and the rest of Australia, which makes NSW the preferred comparison state.

# Conclusions

Empirical evidence of the overall effects of market-based reforms in Victoria is important to help put anecdotal reports of poor student decisions and provider misadventure into perspective and to help guide policy design in other states. Previous descriptive studies that have reported changes in enrolments in Victoria up to 2011 have gone some way in doing this (Essential Services Commission 2011; Skills Victoria 2012a). A previous study by the authors (Leung et al. 2013) has built on these studies by using multivariate analyses to derive a counterfactual to isolate the effects of the Victorian Training Guarantee on enrolments from other contemporaneous changes. This study goes further by deploying the same multivariate framework to provide early evidence of the effects of the Victorian Training Guarantee on enrolments by equity groups and on post-study outcomes.

Overall, we estimate that the Victorian Training Guarantee has increased engagement in vocational education. However, the evidence presented in this report shows that the increase in engagement among equity group members, namely, people with a disability and people from non-English speaking backgrounds, has not been as great as for those who are not from an equity group. For Indigenous students we estimate that the Victorian Training Guarantee has had no effect on enrolment growth. The smaller effect on equity group enrolments raises concerns over access, particularly if the cause relates to providers not having the capacity to cater for their special learning needs or if any extra costs borne by providers to cater for their special needs are not being sufficiently compensated under the Victorian VET system. Why the Victorian Training Guarantee has not improved equity group engagement in education is an issue for further examination and action if necessary.

In terms of post-study outcomes, the analysis has been limited by the availability of data. Because outcome data are only just becoming available, the sample of analysis is limited to course graduates who enrolled in January or February 2010 to allow us to observe outcomes within at least a two-year window. The two main implications of these data constraints are that, first, the sample is small and the results are estimated with imprecision and are not as robust as we would like. Second, the analysis of Victorian Training Guarantee impacts for those aged 25 years and over in 2010 is prior to the extension of the entitlement from diploma-level courses to any higher qualification in 2011 and may not represent the effect of the training guarantee for this cohort. As more data become available, the results presented in this study will be updated to provide a clearer picture of the effects of the training guarantee.

Taking the data limitations into account, we confine our conclusions to three main findings. First, for those aged 15–19 years, who have an open entitlement to a publicly funded course of their choice and with their provider of choice, the evidence presented in this study is broadly positive. We find that the Victorian Training Guarantee significantly improves their chances of being in full-time employment six months after training and has a significant positive effect on course satisfaction. Importantly, results from a sensitivity analysis show that these findings are generally robust to alternative counterfactual assumptions. These positive effects may be realised through different channels, but the evidence presented in a previous report by the authors (Leung et al. 2013) suggests that it may be because increased supply from private providers gives greater access to training in areas of high skill demand.

Second, the effects of the Victorian Training Guarantee appear to be less positive for 20 to 24-year-old graduates, whose entitlement is limited to a higher-level course. In particular, the only significant result is an estimated reduction in the chances of attaining a job at a higher skill level following

course completion. We conjecture that restricting the entitlement to higher-level courses may lead to lower benefits because it encourages further investments in existing skills instead of undertaking reskilling in response to skill demands. For students who have made poor initial education decisions, greater access to skill deepening under the Victorian Training Guarantee may do little to improve their outcomes. A possible implication of these findings is that differences in the early impacts across age cohorts point to the greater role of course choice in influencing reform outcomes compared with course quality. This underlines the importance of supporting student decisions through the provision of timely data on possible course outcomes, as provided by MySkills, and in avoiding restrictions on course choice that may impede or distort student responses to skill demands.

Third, we find no strong evidence to suggest that the employment effects from the Victorian Training Guarantee are much different for graduates who have a disability or who are from a non-English speaking background, while, due to insufficient data, the results for Indigenous students are inconclusive.



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# Appendix A:

## VET trends across states

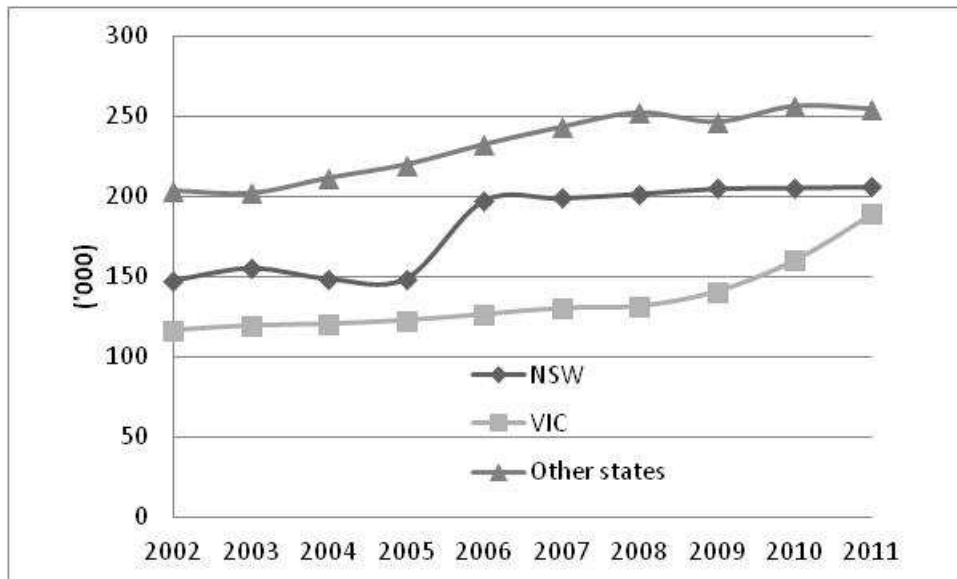
Our difference-in-differences approach requires at least one comparison state for Victoria that can be used to estimate counterfactuals (what would have happened in Victoria had the reforms not been introduced). In principle, we could choose any state. But a good comparison state should be as similar as possible to the ‘treatment state’ (Victoria) in all respects other than the ‘treatment’ (the reforms) and its associated impacts, and should have been following similar trends in the outcomes of interest (for example, enrolments, reported satisfaction with VET provision) prior to the treatment. At first glance, the most likely comparison state is NSW (on scale grounds alone). But how similar was NSW to Victoria prior to the reforms, and were the two states following similar trends prior to the reforms? Here we present some preliminary analyses of the second of these two questions using a combination of publicly available aggregate data drawn from VOCSTATS (for enrolments) and our own calculations using the Student Outcomes Survey data (for graduate outcomes). Where we use VOCSTATS data, we can chart trends back to 2002 (although the key year in terms of parallel trends is the year just before the Victorian Training Guarantee, that is, 2007–08). Where we use Student Outcomes Survey data, we can only chart trends back to 2006.

Figures A1 to A9 show state-level trends – for Victoria, New South Wales and the rest of Australia – in the number of enrolments by age group, by equity group, and by qualification level. The trends in overall enrolments by age group look parallel or close to parallel over the key period, both comparing Victoria to NSW and comparing Victoria to the rest of Australia. For Indigenous enrolments, although trends over 2007–08 for Victoria and NSW look similar, there is a trend *fall* in enrolments for the rest of Australia not shared by Victoria and NSW, suggesting that the rest of Australia may not be an appropriate comparator for this particular outcome. For enrolments of those reporting a disability, the opposite appears to be the case, with the rest of Australia and Victoria following similar trends, but NSW and Victoria slightly diverging over the key 2007–08 period. All three trends in enrolments for those for whom English is a second language are closely parallel. For enrolments at diploma or above level, although NSW and the rest of Australia appear to be following similar trends, Victoria appears to be diverging, even prior to the Victorian Training Guarantee reforms, and the potential for a continuation of this divergence had the training guarantee not been introduced means we should be cautious about our difference-in-differences results pertaining to enrolments at this level. In contrast, enrolments at certificate III/IV and I/II levels appear to be following close to parallel trends in all cases.

Figures A10 to A18 show state-level trends in selected graduate outcomes: the proportion in employment by age group; the proportion satisfied or highly satisfied with their course by age group; and the proportion reporting that their training was relevant or highly relevant to their job by age group. Prior trends in the proportion of graduates in employment look close to parallel for all age groups. Trends in the proportion of graduates reporting they are satisfied or highly satisfied with their course are obscured to some degree by noise in the data, but the main concern is for the 25 years and over age group, such that the rest of Australia may possibly be a more suitable comparator than NSW. Trends in the proportion of graduates who report their course being relevant or highly relevant to their job are also partly obscured by noise, but for both the 20 to 24 years and 25 years and over age groups there is a suggestion that the rest of Australia may be a more suitable comparator than NSW. For the 15–19 years age group, again it is Victoria that appears to diverge prior to the Victorian

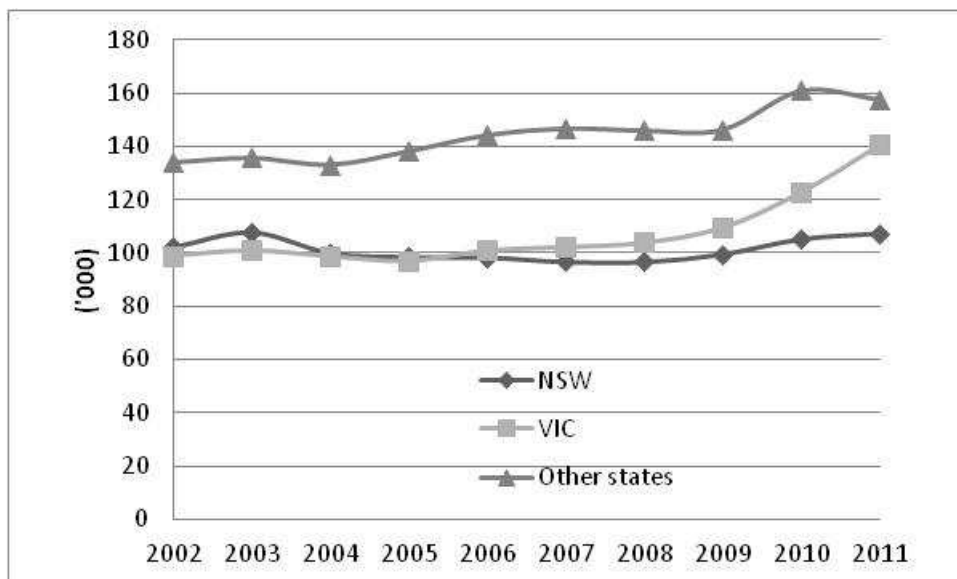
Training Guarantee from the other states and territories, again suggesting we should be cautious in reading too much into our difference-in-differences results for this particular outcome for this particular group.

**Figure A1 Course enrolments, 15–19 years age group**



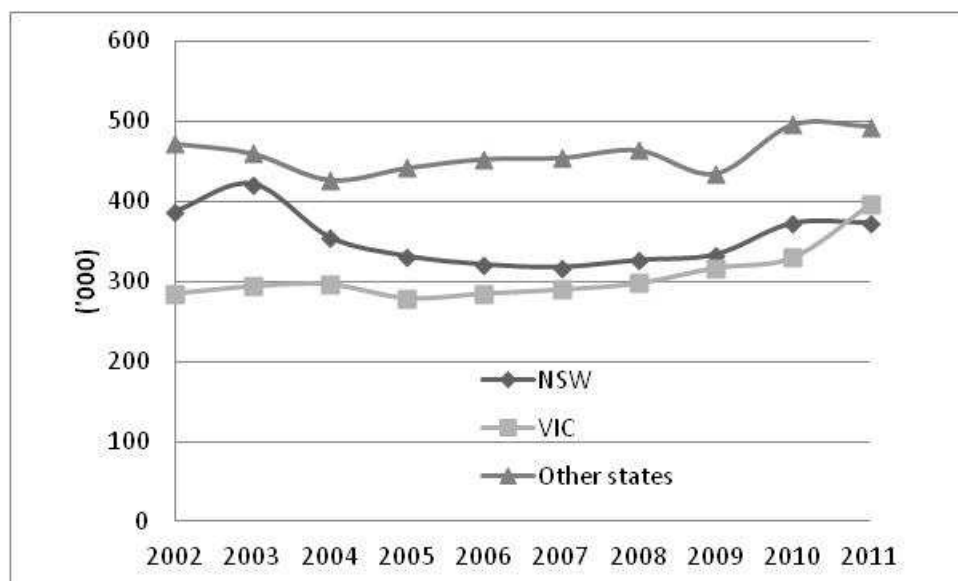
Source: VOCSTATS.

**Figure A2 Course enrolments, 20–24 years age group**



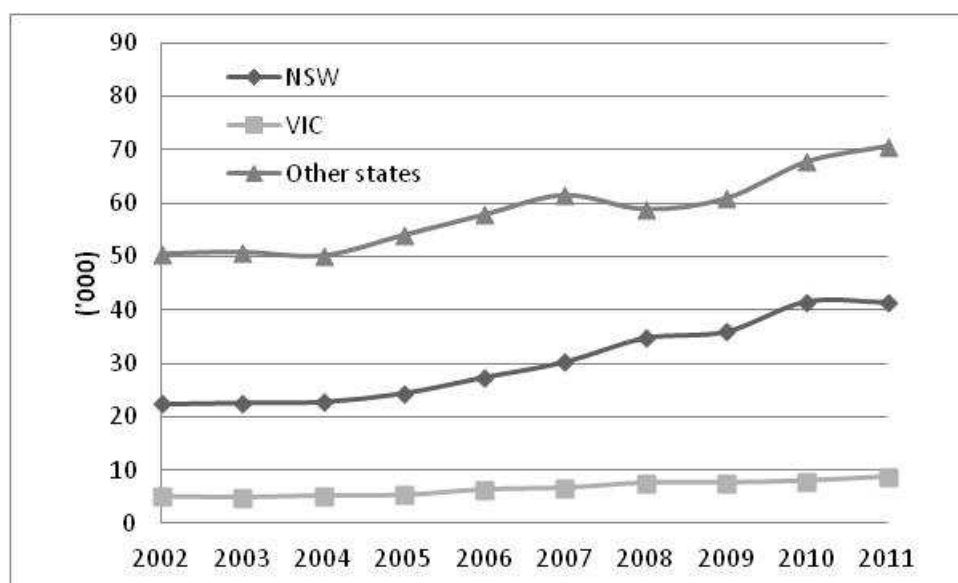
Source: VOCSTATS.

**Figure A3 Course enrolments, 25 years and over age group**



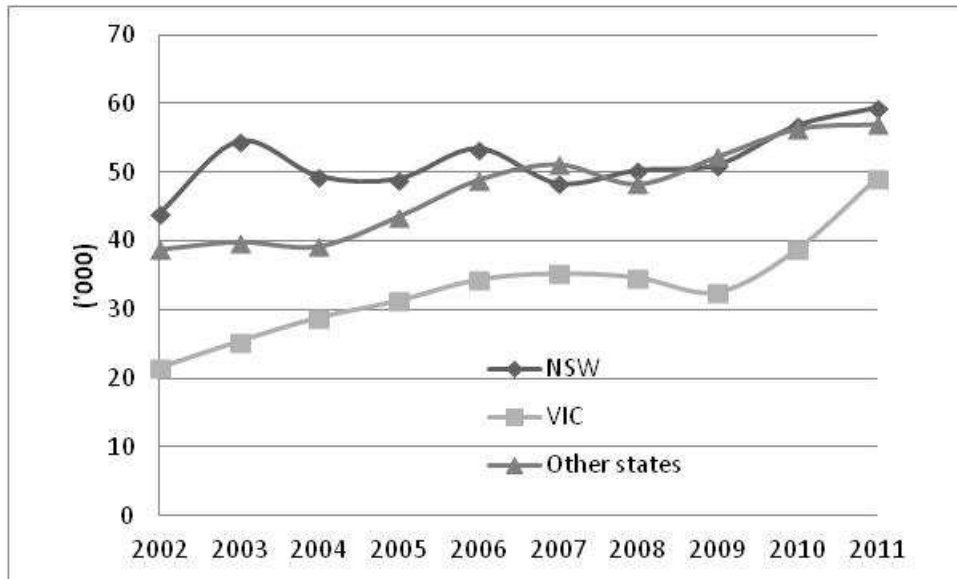
Source: VOCSTATS.

**Figure A4 Course enrolments, Indigenous students**



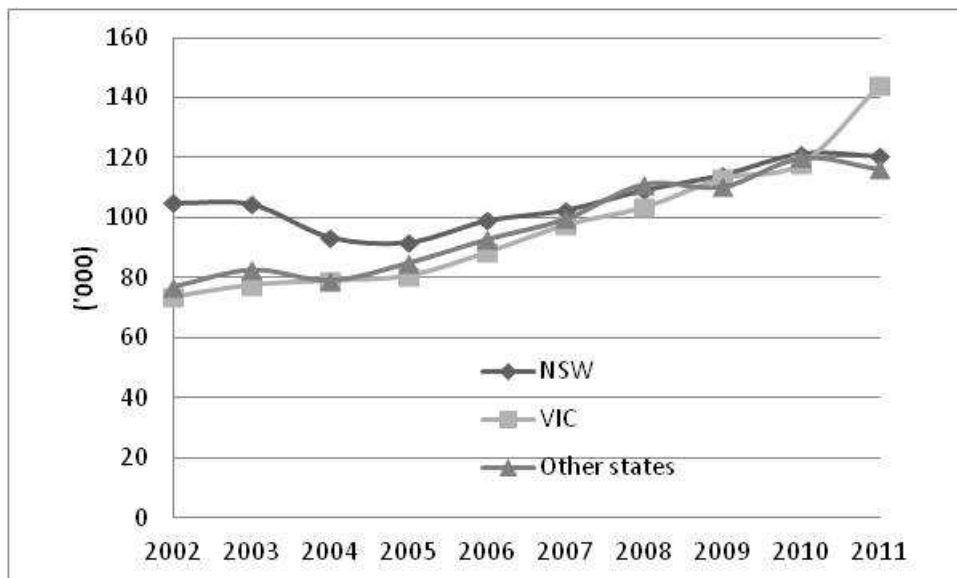
Source: VOCSTATS.

**Figure A5 Course enrolments, students reporting a disability**



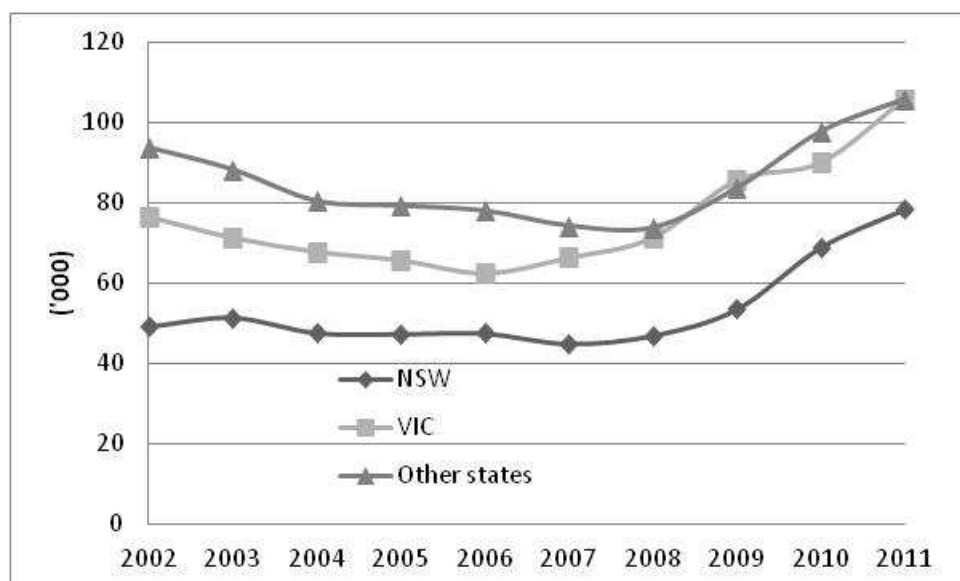
Source: VOCSTATS.

**Figure A6 Course enrolments, students from a non-English speaking background**



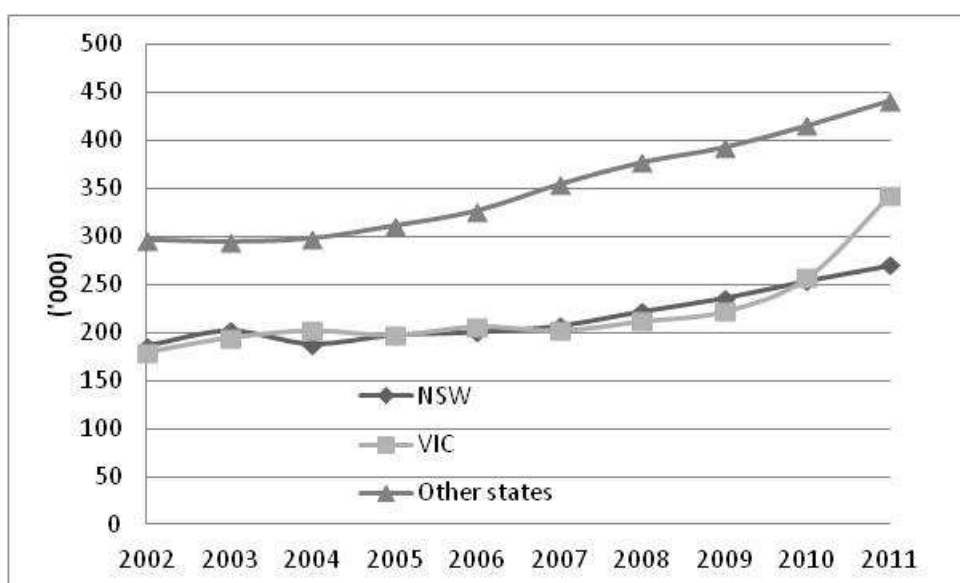
Source: VOCSTATS.

**Figure A7 Course enrolments, diploma or higher**



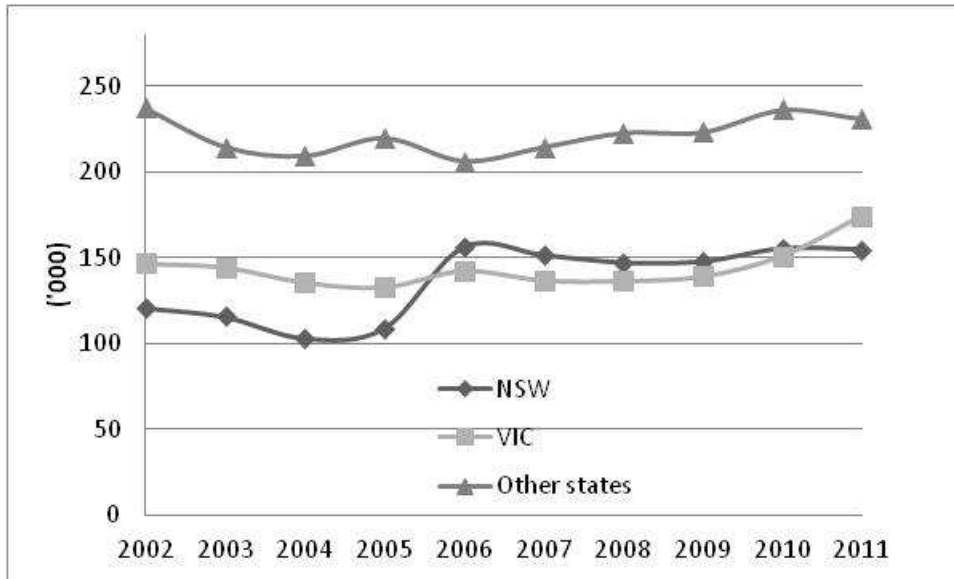
Source: VOCSTATS.

**Figure A8 Course enrolments, certificate III/IV**



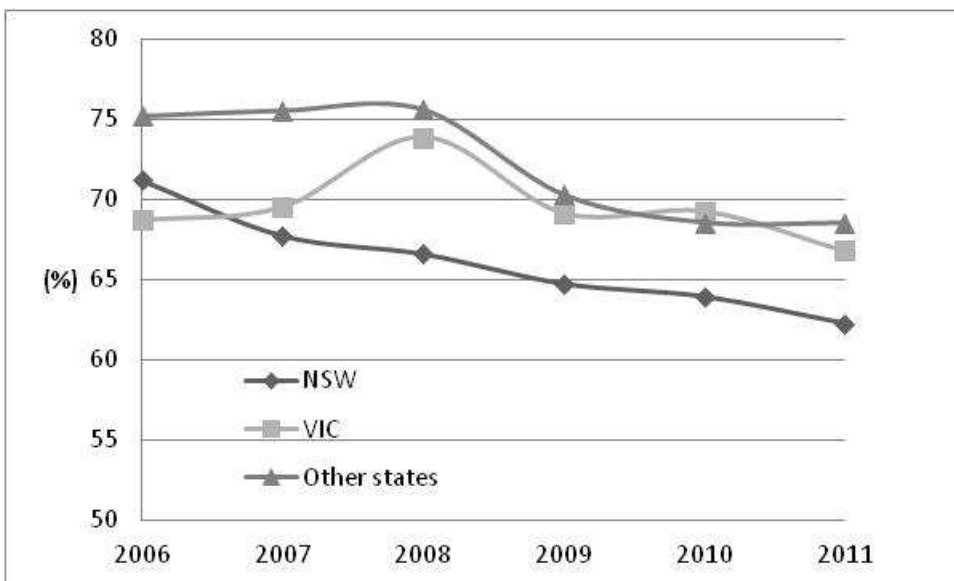
Source: VOCSTATS.

**Figure A9 Course enrolments, certificate I/II**



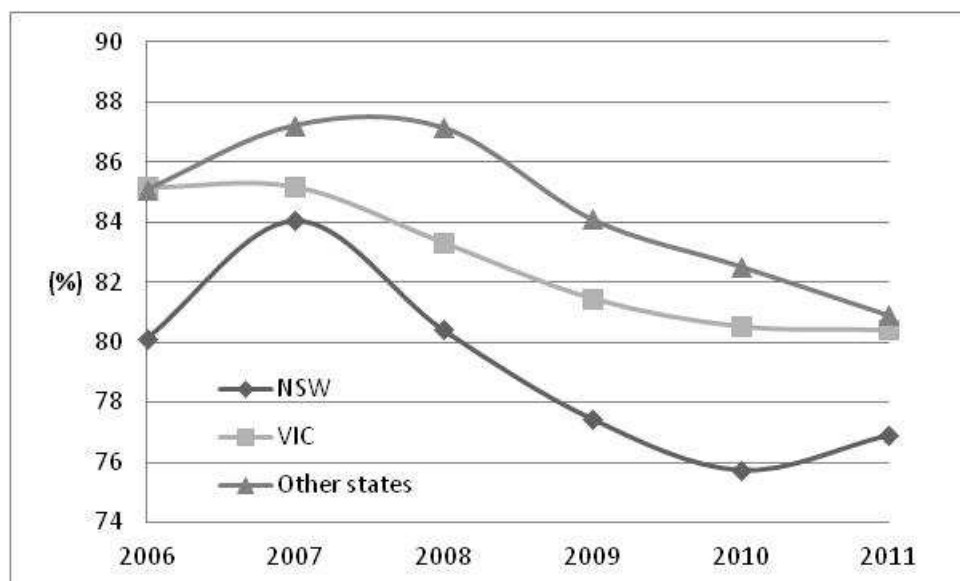
Source: VOCSTATS.

**Figure A10 Proportion of VET graduates in employment, 15–19 years age group**



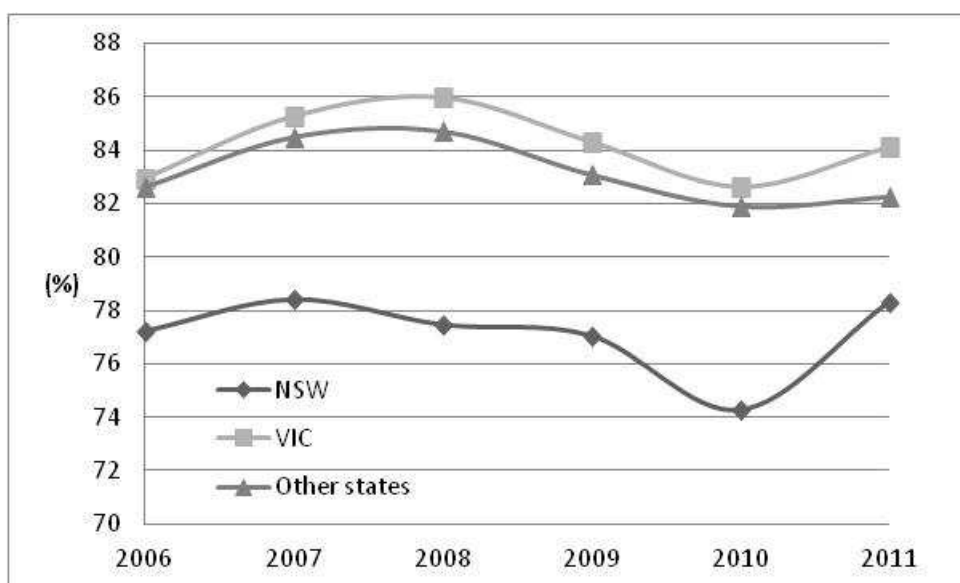
Source: Authors' calculations using Students Outcomes Survey.

**Figure A11 Proportion of VET graduates in employment, 20–24 years age group**



Source: Authors' calculations using Students Outcomes Survey.

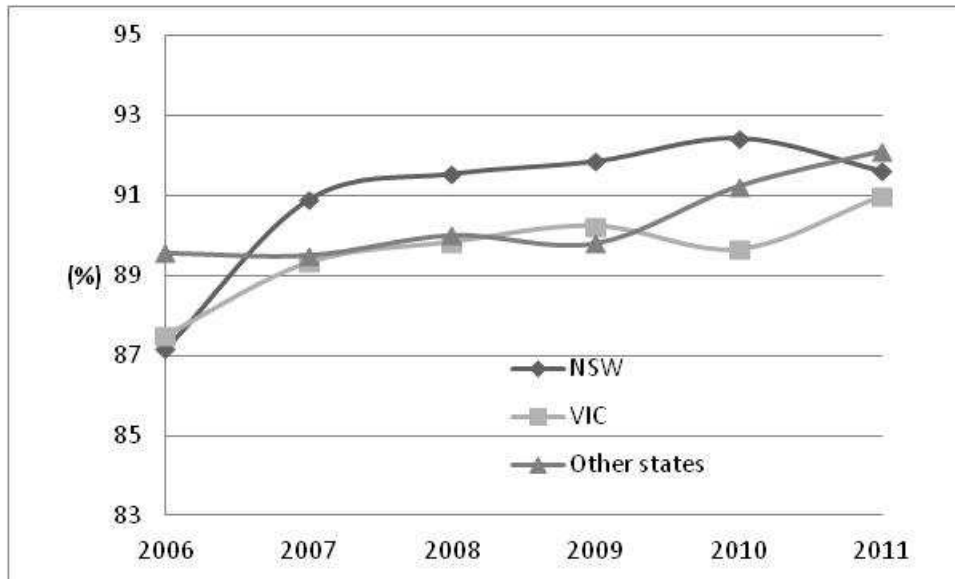
**Figure A12 Proportion of VET graduates in employment, 25 years and over age group**



Source: Authors' calculations using Students Outcomes Survey.

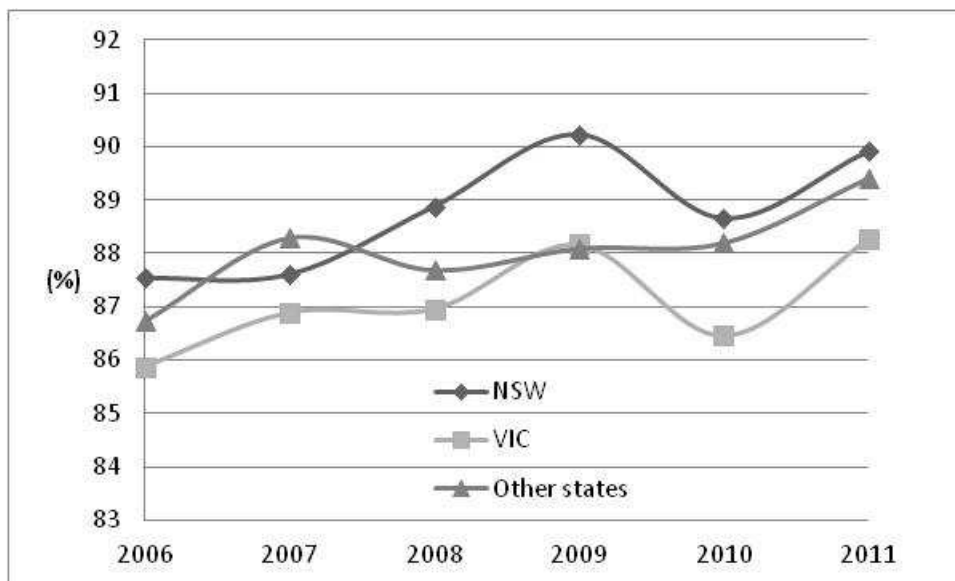


**Figure A13 Proportion of VET graduates satisfied/highly satisfied with course, 15–19 years age group**



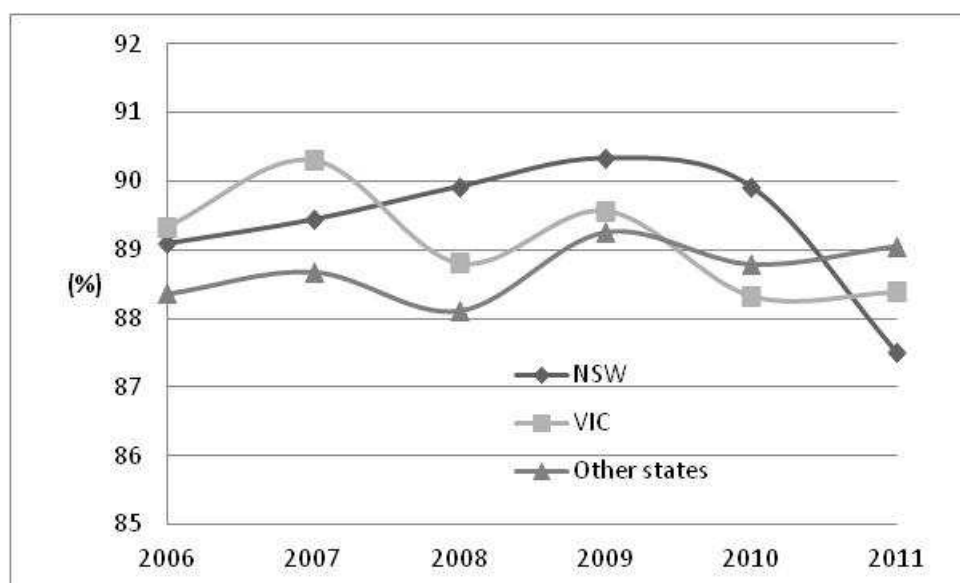
Source: Authors' calculations using Students Outcomes Survey.

**Figure A14 Proportion of VET graduates satisfied/highly satisfied with course, 20–24 years age group**



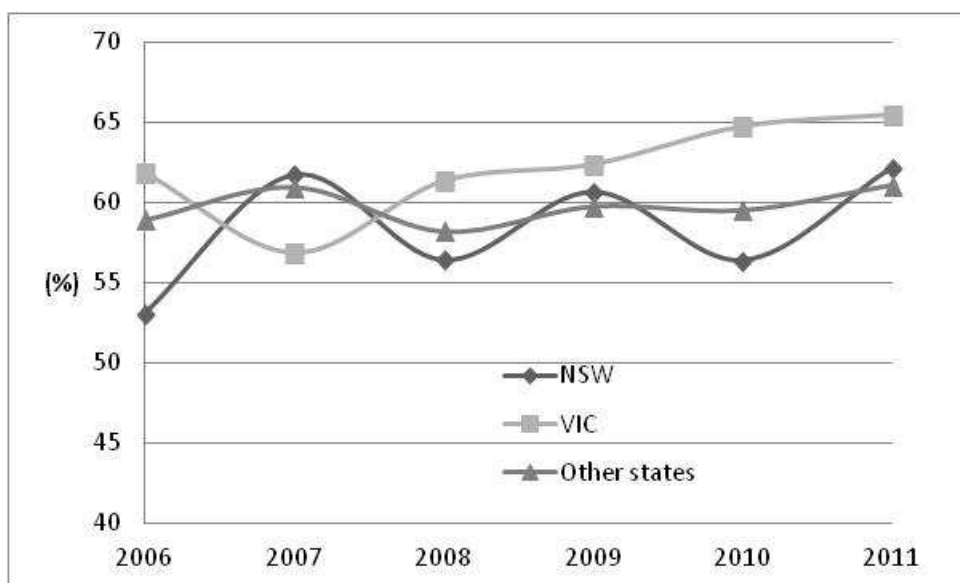
Source: Authors' calculations using Students Outcomes Survey.

**Figure A15 Proportion of VET graduates satisfied/highly satisfied with course, 25 years and over age group**



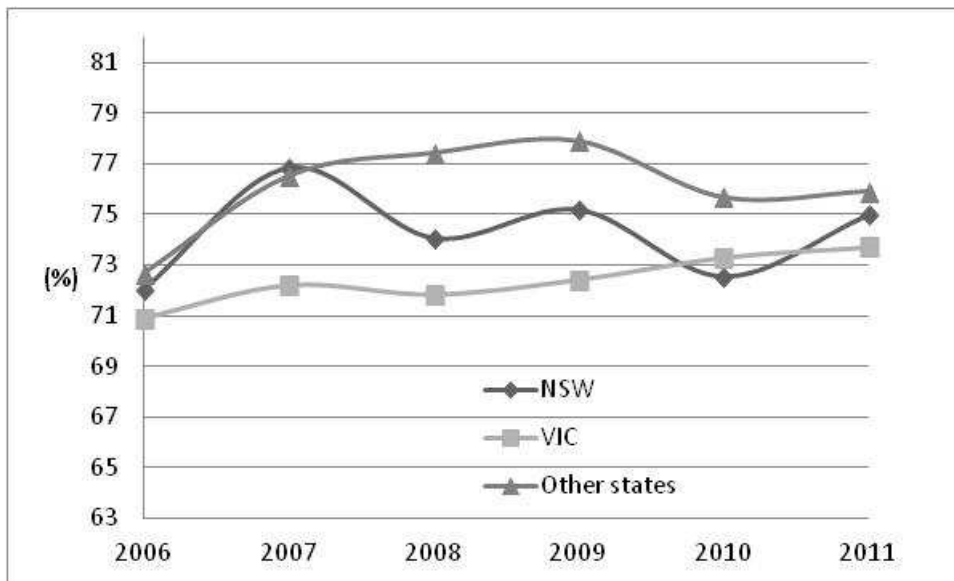
Source: Authors' calculations using Students Outcomes Survey.

**Figure A16 Proportion of VET graduates reporting course relevant/highly relevant to job, 15–19 years age group**



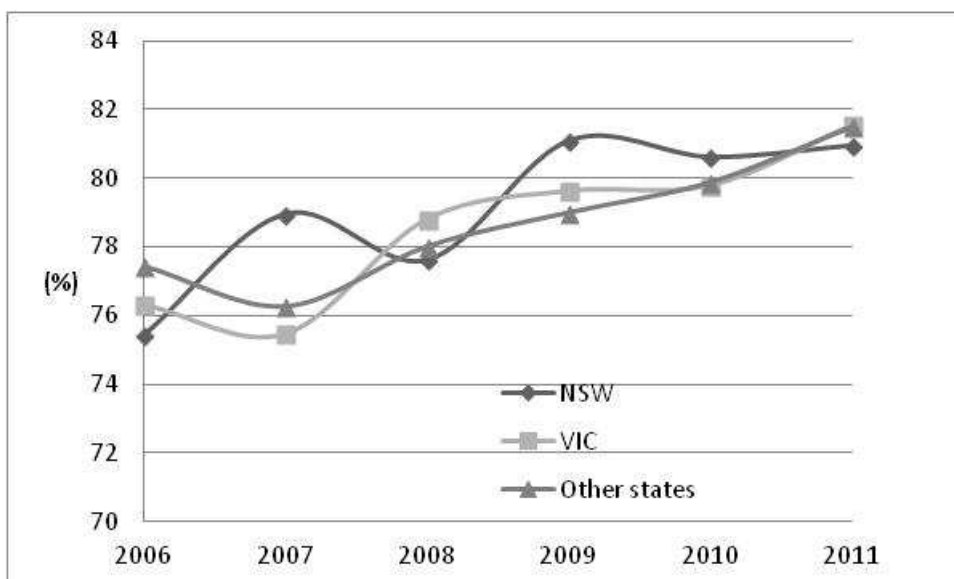
Source: Authors' calculations using Students Outcomes Survey.

**Figure A17** Proportion of VET graduates reporting course relevant/highly relevant to job, 20–24 years age group



Source: Authors' calculations using Students Outcomes Survey.

**Figure A18** Proportion of VET graduates reporting course relevant/highly relevant to job, 25 years and over age group



Source: Authors' calculations using Students Outcomes Survey.

# Appendix B: Enrolment data

**Table B1 Number of course enrolments at AQF level 1 and above in Victoria, AVETMISS**

Age	Government-funded <sup>a</sup>			Domestic fee-for-service			International and other <sup>b</sup>			Trainees/apprentices			All		
	2008	2010	2011	2008	2010	2011	2008	2010	2011	2008	2010	2011	2008	2010	2011
<i>TAFE<sup>c</sup></i>															
15–19	29,885	33,468	35,493	5,695	5,751	4,378	2,145	1,645	581	10,501	11,710	7,842	48,226	52,574	48,294
20–24	21,586	26,038	24,877	5,554	7,456	6,448	5,504	5,156	2,445	4,691	6,039	4,278	37,335	44,689	38,048
25+	76,140	85,817	70,891	30,006	39,341	38,135	3,833	4,288	2,014	5,740	6,935	6,243	115,719	136,381	117,283
<b>Total</b>	<b>127,611</b>	<b>145,323</b>	<b>131,261</b>	<b>41,255</b>	<b>52,548</b>	<b>48,961</b>	<b>11,482</b>	<b>11,089</b>	<b>5,040</b>	<b>20,932</b>	<b>24,684</b>	<b>18,363</b>	<b>201,280</b>	<b>233,644</b>	<b>203,625</b>
<i>ACE</i>															
15–19	3,031	3,654	4,884	564	719	629	-	1	-	512	483	507	4,107	4,857	6,020
20–24	1,496	1,983	2,756	492	623	725	3	2	-	361	313	387	2,352	2,921	3,868
25+	13,333	10,797	15,803	3,605	4,506	4,668	19	1	3	729	906	1,062	17,686	16,210	21,536
<b>Total</b>	<b>17,860</b>	<b>16,434</b>	<b>23,443</b>	<b>4,661</b>	<b>5,848</b>	<b>6,022</b>	<b>22</b>	<b>4</b>	<b>3</b>	<b>1,602</b>	<b>1,702</b>	<b>1,956</b>	<b>24,145</b>	<b>23,988</b>	<b>31,424</b>
<i>Private<sup>d</sup></i>															
15–19	1,416	8,566	18,952	198	137	38	-	-	-	4,487	5,481	6,741	6,101	14,184	25,731
20–24	1,721	9,073	19,369	266	225	82	-	1	-	3,779	4,447	5,848	5,766	13,746	25,299
25+	10,604	19,846	58,059	1,571	1,495	873	-	-	-	6,467	7,293	15,563	18,642	28,634	74,495
<b>Total</b>	<b>13,741</b>	<b>37,485</b>	<b>96,380</b>	<b>2,035</b>	<b>1,857</b>	<b>993</b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>14,733</b>	<b>17,221</b>	<b>28,152</b>	<b>30,509</b>	<b>56,564</b>	<b>125,525</b>
<i>All</i>															
15–19	34,332	45,688	59,329	6,457	6,607	5,045	2,145	1,646	581	15,500	17,674	15,090	58,434	71,615	80,045
20–24	24,803	37,094	47,002	6,312	8,304	7,255	5,507	5,159	2,445	8,831	10,799	10,513	45,453	61,356	67,215
25+	100,077	116,460	144,753	35,182	45,342	43,676	3,852	4,289	2,017	12,936	15,134	22,868	152,047	181,225	213,314
<b>Total</b>	<b>159,212</b>	<b>199,242</b>	<b>251,084</b>	<b>47,951</b>	<b>60,253</b>	<b>55,976</b>	<b>11,504</b>	<b>11,094</b>	<b>5,043</b>	<b>37,267</b>	<b>43,607</b>	<b>48,471</b>	<b>255,934</b>	<b>314,196</b>	<b>360,574</b>

Notes: a Commonwealth and state general purpose recurrent funding; Commonwealth specific purpose program funding; state specific purpose program funding.

b International (excluding citizens of New Zealand who are treated as domestic full-fee paying) full-fee paying students and other revenue from sub-contracted, auspicing, partnership or similar arrangements.

c TAFE includes TAFE institutes and VET provided through universities.

d Includes training provided by private registered training organisations as well as training provided through private and publicly owned trading enterprises, schools and industry/professional associations.

Note that information on enrolments with private providers in anything other than publicly funded courses is incomplete, most particularly in respect to fee-for-service enrolments.

**Table B2 Number of course enrolments at AQF level 1 and above in NSW, AVETMISS**

Age	Government-funded <sup>a</sup>			Domestic fee-for-service			International and other <sup>b</sup>			Trainees/ apprentices			All		
	2008	2010	2011	2008	2010	2011	2008	2010	2011	2008	2010	2011	2008	2010	2011
<i>TAFE<sup>c</sup></i>															
15–19	29,736	35,325	32,517	1,355	1,792	1,882	653	881	595	13,131	12,453	11,890	44,875	50,451	46,884
20–24	23,327	26,601	25,717	2,392	2,538	3,134	2,109	2,257	1,646	4,060	4,289	4,627	31,888	35,685	35,124
25+	80,494	90,406	85,798	11,248	11,772	15,953	2,235	2,595	2,210	6,265	5,653	4,946	100,242	110,426	108,907
<b>Total</b>	<b>133,557</b>	<b>152,332</b>	<b>144,032</b>	<b>14,995</b>	<b>16,102</b>	<b>20,969</b>	<b>4,997</b>	<b>5,733</b>	<b>4,451</b>	<b>23,456</b>	<b>22,395</b>	<b>21,463</b>	<b>177,005</b>	<b>196,562</b>	<b>190,915</b>
<i>ACE</i>															
15–19	1,948	2,396	1,952	14	89	8	-	1	3	1,124	786	765	3,086	3,272	2,728
20–24	2,080	2,236	2,003	62	18	17	-	-	4	510	498	508	2,652	2,752	2,532
25+	17,087	17,173	14,793	602	362	268	12	7	14	696	852	673	18,397	18,394	15,748
<b>Total</b>	<b>21,115</b>	<b>21,805</b>	<b>18,748</b>	<b>678</b>	<b>469</b>	<b>293</b>	<b>12</b>	<b>8</b>	<b>21</b>	<b>2,330</b>	<b>2,136</b>	<b>1,946</b>	<b>24,135</b>	<b>24,418</b>	<b>21,008</b>
<i>Private<sup>d</sup></i>															
15–19	162	272	298	1	45	54	-	-	-	6,316	4,863	4,727	6,479	5,180	5,079
20–24	320	1,104	931	6	149	147	1	-	-	5,763	5,009	4,915	6,090	6,262	5,993
25+	2,687	9,159	6,699	132	2,106	2,119	-	-	2	12,148	11,709	10,067	14,967	22,974	18,887
<b>Total</b>	<b>3,169</b>	<b>10,535</b>	<b>7,928</b>	<b>139</b>	<b>2,300</b>	<b>2,320</b>	<b>1</b>	<b>-</b>	<b>2</b>	<b>24,227</b>	<b>21,581</b>	<b>19,709</b>	<b>27,536</b>	<b>34,416</b>	<b>29,959</b>
<i>All</i>															
15–19	31,846	37,993	34,767	1,370	1,926	1,944	653	882	598	20,571	18,102	17,382	54,440	58,903	54,691
20–24	25,727	29,941	28,651	2,460	2,705	3,298	2,110	2,257	1,650	10,333	9,796	10,050	40,630	44,699	43,649
25+	100,268	116,738	107,290	11,982	14,240	18,340	2,247	2,602	2,226	19,109	18,214	15,686	133,606	151,794	143,542
<b>Total</b>	<b>157,841</b>	<b>184,672</b>	<b>170,708</b>	<b>15,812</b>	<b>18,871</b>	<b>23,582</b>	<b>5,010</b>	<b>5,741</b>	<b>4,474</b>	<b>50,013</b>	<b>46,112</b>	<b>43,118</b>	<b>228,676</b>	<b>255,396</b>	<b>241,882</b>

Notes: a Commonwealth and state general purpose recurrent funding; Commonwealth specific purpose program funding; state specific purpose program funding.

b International (excluding citizens of New Zealand who are treated as domestic full-fee paying) full-fee paying students and other revenue from sub-contracted, auspicing, partnership or similar arrangements.

c TAFE includes TAFE institutes and VET provided through universities. dIncludes training provided by private registered training organisations as well as training provided through private and publicly owned trading enterprises, schools and industry/professional associations.

d Note that information on enrolments with private providers in anything other than publicly funded courses is incomplete, most particularly in respect of fee-for-service enrolments.

**Table B3 Enrolment in fields of education for enrolments at AQF level 1 and above in Victoria**

	TAFE			ACE			Private		
	2008	2010	2011	2008	2010	2011	2008	2010	2011
Natural and physical sciences	1,472	1,211	836	-	-	-	2	29	178
Information technology	5,724	4,671	3,198	100	54	59	65	53	101
Engineering and related technologies	35,225	45,867	34,967	402	391	1,260	5,195	10,094	26,621
Architecture and building	11,264	24,082	16,572	85	66	129	1,034	1,882	2,503
Agriculture, environmental and related	11,159	13,006	16,361	540	872	1,053	1,147	1,888	2,190
Health	10,341	16,042	15,119	736	1,247	1,069	629	1,665	3,433
Education	6,512	8,346	5,994	899	1,074	1,586	716	819	1,855
Management and commerce	51,172	46,260	35,538	5,533	4,194	5,537	10,996	19,465	48,312
Society and culture	18,061	21,599	16,795	4,448	6,182	7,879	3,780	9,694	22,118
Creative arts	6,033	7,947	7,499	215	145	305	349	512	625
Food, hospitality and personal services	19,077	20,070	15,684	3,531	4,172	5,033	3,687	7,728	12,874
Mixed field programs	25,236	24,543	35,062	7,656	5,591	7,514	2,909	2,735	4,715

Source: National VET Provider Collection.

**Table B4 Enrolment in fields of education for enrolments at AQF level 1 and above in NSW**

	TAFE			ACE			Private		
	2008	2010	2011	2008	2010	2011	2008	2010	2011
Natural and physical sciences	949	918	969	-	-	-	7	83	37
Information technology	7,590	8,368	8,330	149	28	33	131	122	199
Engineering and related technologies	24,957	25,497	25,733	599	629	627	4,586	6,669	6,308
Architecture and building	11,473	11,498	10,816	51	1,603	908	220	688	433
Agriculture, environmental and related	7,021	7,709	7,370	1,318	695	496	876	3,429	3,175
Health	6,746	8,451	8,337	1,937	2,615	2,269	230	971	489
Education	2,674	4,910	6,752	1,319	2,239	1,692	212	711	505
Management and commerce	50,973	54,438	51,559	7,464	6,569	5,537	14,196	13,445	11,369
Society and culture	29,308	33,248	31,674	5,134	3,784	3,481	3,405	3,910	3,166
Creative arts	7,402	9,233	8,604	126	142	139	46	78	36
Food, hospitality and personal services	11,591	12,703	12,247	3,651	4,284	4,554	3,322	4,209	3,805
Mixed field programmes	16,321	19,589	18,520	2,387	1,810	1,272	305	101	437

Source: National VET Provider Collection.

**Table B5 Number of course enrolments at AQF level 1 and above by course level in Victoria**

Age	Government-funded <sup>a</sup>			Domestic fee-for-service			International and other <sup>b</sup>			Trainees/apprentices			All		
	2008	2010	2011	2008	2010	2011	2008	2010	2011	2008	2010	2011	2008	2010	2011
<i>Diploma or above<sup>c</sup></i>															
15–19	9,473	9,734	9,554	377	200	271	919	662	323	85	101	235	10,854	10,697	10,383
20–24	6,930	7,953	8,119	471	498	516	3,020	2,365	1,387	165	267	801	10,586	11,083	10,823
25+	16,755	21,989	22,171	2,681	3,956	3,678	1,867	1,725	1,035	261	911	3,558	21,564	28,581	30,442
<b>Total</b>	<b>33,158</b>	<b>39,676</b>	<b>39,844</b>	<b>3,529</b>	<b>4,654</b>	<b>4,465</b>	<b>5,806</b>	<b>4,752</b>	<b>2,745</b>	<b>511</b>	<b>1,279</b>	<b>4,594</b>	<b>43,004</b>	<b>50,361</b>	<b>51,648</b>
<i>Certificate IV</i>															
15–19	5,623	6,523	10,434	459	552	317	332	340	127	391	732	616	6,805	8,147	11,494
20–24	4,641	7,029	11,999	1,256	1,609	1,260	799	1,023	542	538	816	1,254	7,234	10,477	15,055
25+	17,966	28,082	33,655	8,642	9,805	11,682	733	904	478	1,351	2,742	4,895	28,692	41,533	50,710
<b>Total</b>	<b>28,230</b>	<b>41,634</b>	<b>56,088</b>	<b>10,357</b>	<b>11,966</b>	<b>13,259</b>	<b>1,864</b>	<b>2,267</b>	<b>1,147</b>	<b>2,280</b>	<b>4,290</b>	<b>6,765</b>	<b>42,731</b>	<b>60,157</b>	<b>77,259</b>
<i>Certificate III</i>															
15–19	5,092	9,927	13,601	1,241	1,587	1,069	621	464	128	13,550	15,065	13,145	20,504	27,043	27,943
20–24	5,183	10,005	13,513	1,571	2,042	1,926	1,367	1,498	492	7,365	9,090	8,089	15,486	22,635	24,020
25+	25,895	29,627	46,406	8,240	10,556	9,666	1,013	1,389	464	9,952	10,533	13,780	45,100	52,105	70,316
<b>Total</b>	<b>36,170</b>	<b>49,559</b>	<b>73,520</b>	<b>11,052</b>	<b>14,185</b>	<b>12,661</b>	<b>3,001</b>	<b>3,351</b>	<b>1,084</b>	<b>30,867</b>	<b>34,688</b>	<b>35,014</b>	<b>81,090</b>	<b>101,783</b>	<b>122,279</b>
<i>Certificate II</i>															
15–19	9,527	15,512	18,766	3,694	2,456	2,073	211	108	2	1,460	1,774	1,093	14,892	19,850	21,934
20–24	5,415	9,736	9,268	2,140	2,830	2,656	284	152	18	759	624	369	8,598	13,342	12,311
25+	24,537	25,754	26,267	10,690	15,770	15,218	181	134	28	1,358	946	634	36,766	42,604	42,147
<b>Total</b>	<b>39,479</b>	<b>51,002</b>	<b>54,301</b>	<b>16,524</b>	<b>21,056</b>	<b>19,947</b>	<b>676</b>	<b>394</b>	<b>48</b>	<b>3,577</b>	<b>3,344</b>	<b>2,096</b>	<b>60,256</b>	<b>75,796</b>	<b>76,392</b>
<i>Certificate I</i>															
15–19	4,617	3,992	6,974	686	1,812	1,315	62	72	1	14	2	1	5,379	5,878	8,291
20–24	2,634	2,371	4,103	874	1,325	897	37	121	6	4	2	-	3,549	3,819	5,006
25+	14,924	11,008	16,254	4,929	5,255	3,432	58	137	12	14	2	1	19,925	16,402	19,699
<b>Total</b>	<b>22,175</b>	<b>17,371</b>	<b>27,331</b>	<b>6,489</b>	<b>8,392</b>	<b>5,644</b>	<b>157</b>	<b>330</b>	<b>19</b>	<b>32</b>	<b>6</b>	<b>2</b>	<b>28,853</b>	<b>26,099</b>	<b>32,996</b>

Notes: a Commonwealth and state general purpose recurrent funding; Commonwealth specific purpose program funding; state specific purpose program funding.

b International (excluding citizens of New Zealand who are treated as domestic full-fee paying) full-fee paying students and other revenue from sub-contracted, auspicing, partnership or similar arrangements.

c Including graduate diploma, graduate certificate, advanced diploma, and diploma.

**Table B6 Number of course enrolments at AQF level 1 and above by course level in NSW**

Age	Government-funded <sup>a</sup>			Domestic fee-for-service			International and other <sup>b</sup>			Trainees/ apprentices			All		
	2008	2010	2011	2008	2010	2011	2008	2010	2011	2008	2010	2011	2008	2010	2011
<i>Diploma or above<sup>c</sup></i>															
15–19	5,623	4,723	4,121	87	152	156	332	319	239	21	95	114	6,063	5,289	4,630
20–24	5,409	5,744	5,293	253	441	549	1,004	1,054	685	44	165	211	6,710	7,404	6,738
25+	11,989	19,451	17,655	1,300	2,260	3,196	994	972	719	52	196	315	14,335	22,879	21,885
<b>Total</b>	<b>23,021</b>	<b>29,918</b>	<b>27,069</b>	<b>1,640</b>	<b>2,853</b>	<b>3,901</b>	<b>2,330</b>	<b>2,345</b>	<b>1,643</b>	<b>117</b>	<b>456</b>	<b>640</b>	<b>27,108</b>	<b>35,572</b>	<b>33,253</b>
<i>Certificate IV</i>															
15–19	5,942	6,839	6,544	145	176	201	94	135	142	788	824	779	6,969	7,974	7,666
20–24	6,451	7,482	7,492	675	765	889	292	421	388	1,035	1,165	1,219	8,453	9,833	9,988
25+	20,527	28,223	26,342	5,008	5,087	6,892	324	554	559	2,611	3,950	3,096	28,470	37,814	36,889
<b>Total</b>	<b>32,920</b>	<b>42,544</b>	<b>40,378</b>	<b>5,828</b>	<b>6,028</b>	<b>7,982</b>	<b>710</b>	<b>1,110</b>	<b>1,089</b>	<b>4,434</b>	<b>5,939</b>	<b>5,094</b>	<b>43,892</b>	<b>55,621</b>	<b>54,543</b>
<i>Certificate III</i>															
15–19	9,510	12,039	11,563	507	482	519	171	312	150	16,943	15,182	15,075	27,131	28,015	27,307
20–24	7,264	8,930	8,853	636	637	758	651	661	457	8,139	7,367	7,857	16,690	17,595	17,925
25+	28,928	33,212	31,097	2,968	3,455	3,738	707	843	729	14,532	12,262	11,633	47,135	49,772	47,197
<b>Total</b>	<b>45,702</b>	<b>54,181</b>	<b>51,513</b>	<b>4,111</b>	<b>4,574</b>	<b>5,015</b>	<b>1,529</b>	<b>1,816</b>	<b>1,336</b>	<b>39,614</b>	<b>34,811</b>	<b>34,565</b>	<b>90,956</b>	<b>95,382</b>	<b>92,429</b>
<i>Certificate II</i>															
15–19	8,797	12,099	10,318	433	891	933	46	106	59	2,819	2,001	1,414	12,095	15,097	12,724
20–24	5,146	6,385	5,733	473	589	828	149	107	102	1,115	1,099	763	6,883	8,180	7,426
25+	25,141	24,571	22,668	1,551	2,288	3,418	172	175	160	1,914	1,806	642	28,778	28,840	26,888
<b>Total</b>	<b>39,084</b>	<b>43,055</b>	<b>38,719</b>	<b>2,457</b>	<b>3,768</b>	<b>5,179</b>	<b>367</b>	<b>388</b>	<b>321</b>	<b>5,848</b>	<b>4,906</b>	<b>2,819</b>	<b>47,756</b>	<b>52,117</b>	<b>47,038</b>
<i>Certificate I</i>															
15–19	1,974	2,293	2,221	198	225	135	10	10	8	-	-	-	2,182	2,528	2,364
20–24	1,457	1,400	1,280	423	273	274	14	14	18	-	-	-	1,894	1,687	1,572
25+	13,683	11,281	9,528	1,155	1,150	1,096	50	58	59	-	-	-	14,888	12,489	10,683
<b>Total</b>	<b>17,114</b>	<b>14,974</b>	<b>13,029</b>	<b>1,776</b>	<b>1,648</b>	<b>1,505</b>	<b>74</b>	<b>82</b>	<b>85</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>18,964</b>	<b>16,704</b>	<b>14,619</b>

Notes: a Commonwealth and state general purpose recurrent funding; Commonwealth specific purpose program funding; state specific purpose program funding.

b International (excluding citizens of New Zealand who are treated as domestic full-fee paying) full-fee paying students and other revenue from sub-contracted, auspicing, partnership or similar arrangements.

c Including graduate diploma, graduate certificate, advanced diploma, and diploma.



**Table B7 Number of AQF level 1 and above enrolments by equity group in Victoria**

Age	Government-funded <sup>a</sup>			Domestic fee-for-service			International and other <sup>b</sup>			Trainees/apprentices			All		
	2008	2010	2011	2008	2010	2011	2008	2010	2011	2008	2010	2011	2008	2010	2011
<i>English as a second language</i>															
15–19	4,777	6,079	7,612	636	638	604	1,830	1,430	503	815	928	923	8,058	9,075	9,642
20–24	4,692	6,298	7,566	1,405	1,771	1,322	4,755	4,420	2,102	1,032	938	966	11,884	13,427	11,956
25+	23,566	26,336	36,343	7,533	8,516	7,509	3,264	3,445	1,635	2,362	2,544	3,952	36,725	40,841	49,439
<b>Total</b>	<b>33,035</b>	<b>38,713</b>	<b>51,521</b>	<b>9,574</b>	<b>10,925</b>	<b>9,435</b>	<b>9,849</b>	<b>9,295</b>	<b>4,240</b>	<b>4,209</b>	<b>4,410</b>	<b>5,841</b>	<b>56,667</b>	<b>63,343</b>	<b>71,037</b>
<i>Indigenous</i>															
15–19	966	1,198	1,174	126	192	136	-	-	-	156	191	178	1,248	1,581	1,488
20–24	644	687	793	126	173	124	-	-	-	85	111	154	855	971	1,071
25+	1,833	1,800	1,991	480	489	459	-	-	1	85	124	201	2,398	2,413	2,652
<b>Total</b>	<b>3,443</b>	<b>3,685</b>	<b>3,958</b>	<b>732</b>	<b>854</b>	<b>719</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>326</b>	<b>426</b>	<b>533</b>	<b>4,501</b>	<b>4,965</b>	<b>5,211</b>
<i>With a disability</i>															
15–19	3,218	3,839	5,218	360	471	356	26	18	14	531	670	598	4,135	4,998	6,186
20–24	2,268	3,042	3,955	288	349	362	65	79	42	283	420	431	2,904	3,890	4,790
25+	10,033	10,332	14,190	1,584	2,132	2,245	52	95	31	456	611	946	12,125	13,170	17,412
<b>Total</b>	<b>15,519</b>	<b>17,213</b>	<b>23,363</b>	<b>2,232</b>	<b>2,952</b>	<b>2,963</b>	<b>143</b>	<b>192</b>	<b>87</b>	<b>1,270</b>	<b>1,701</b>	<b>1,975</b>	<b>19,164</b>	<b>22,058</b>	<b>28,388</b>
<i>Not from an equity group</i>															
15–19	23,628	32,582	42,456	4,825	4,708	3,865	266	178	73	12,429	14,793	12,436	41,148	52,261	58,830
20–24	15,342	24,997	31,745	3,953	5,279	5,281	573	621	310	6,492	8,552	8,313	26,360	39,449	45,649
25+	54,505	72,437	85,263	21,623	29,331	32,328	467	732	322	8,568	10,541	16,321	85,163	113,041	134,234
<b>Total</b>	<b>93,475</b>	<b>130,016</b>	<b>159,464</b>	<b>30,401</b>	<b>39,318</b>	<b>41,474</b>	<b>1,306</b>	<b>1,531</b>	<b>705</b>	<b>27,489</b>	<b>33,886</b>	<b>37,070</b>	<b>152,671</b>	<b>204,751</b>	<b>238,713</b>

Notes: a This means enrolling in a course that is higher than existing highest qualification. For those who have not completed Year 12, this means attaining a minimum of a certificate II, which is treated as Year 12 equivalent.

b International (excluding citizens of New Zealand who are treated as domestic full-fee paying) full-fee paying students and other revenue from sub-contracted, auspicing, partnership or similar arrangements.

Source: National VET Provider Collection.

**Table B8 Number of AQF level 1 and above enrolments by equity group in NSW**

Age	Government-funded <sup>a</sup>			Domestic fee-for-service			International and other <sup>b</sup>			Trainees/apprentices			All		
	2008	2010	2011	2008	2010	2011	2008	2010	2011	2008	2010	2011	2008	2010	2011
<i>English as a second language</i>															
15–19	6,382	6,639	6,171	218	392	379	564	793	516	1,884	1,465	1,389	9,048	9,289	8,455
20–24	6,402	6,836	6,584	483	420	541	1,373	1,799	1,342	1,481	1,285	1,210	9,739	10,340	9,677
25+	29,929	31,679	31,249	1,671	1,937	2,606	1,349	1,984	1,775	4,069	3,835	3,302	37,018	39,435	38,932
<b>Total</b>	<b>42,713</b>	<b>45,154</b>	<b>44,004</b>	<b>2,372</b>	<b>2,749</b>	<b>3,526</b>	<b>3,286</b>	<b>4,576</b>	<b>3,633</b>	<b>7,434</b>	<b>6,585</b>	<b>5,901</b>	<b>55,805</b>	<b>59,064</b>	<b>57,064</b>
<i>Indigenous</i>															
15–19	2,834	3,880	3,554	131	145	123	-	2	-	740	793	774	3,705	4,820	4,451
20–24	1,714	2,181	2,279	105	147	161	3	1	2	381	504	508	2,203	2,833	2,950
25+	5,821	7,088	6,451	302	477	584	4	9	9	664	678	625	6,791	8,252	7,669
<b>Total</b>	<b>10,369</b>	<b>13,149</b>	<b>12,284</b>	<b>538</b>	<b>769</b>	<b>868</b>	<b>7</b>	<b>12</b>	<b>11</b>	<b>1,785</b>	<b>1,975</b>	<b>1,907</b>	<b>12,699</b>	<b>15,905</b>	<b>15,070</b>
<i>With a disability</i>															
15–19	2,649	3,589	3,541	59	66	97	5	3	5	696	613	766	3,409	4,271	4,409
20–24	2,054	2,767	2,766	48	94	96	22	18	16	282	254	333	2,406	3,133	3,211
25+	11,020	12,503	12,140	374	591	688	22	28	29	439	450	380	11,855	13,572	13,237
<b>Total</b>	<b>15,723</b>	<b>18,859</b>	<b>18,447</b>	<b>481</b>	<b>751</b>	<b>881</b>	<b>49</b>	<b>49</b>	<b>50</b>	<b>1,417</b>	<b>1,317</b>	<b>1,479</b>	<b>17,670</b>	<b>20,976</b>	<b>20,857</b>
<i>Not from an equity group</i>															
15–19	19,034	23,946	21,692	949	1,312	1,343	73	83	79	16,772	15,169	14,449	36,828	40,510	37,563
20–24	14,050	17,414	16,396	1,300	1,937	2,372	161	220	189	7,780	7,535	7,830	23,291	27,106	26,787
25+	46,130	59,600	53,811	6,161	9,956	13,299	231	320	306	12,913	12,728	11,020	65,435	82,604	78,436
<b>Total</b>	<b>79,214</b>	<b>100,960</b>	<b>91,899</b>	<b>8,410</b>	<b>13,205</b>	<b>17,014</b>	<b>465</b>	<b>623</b>	<b>574</b>	<b>37,465</b>	<b>35,432</b>	<b>33,299</b>	<b>125,554</b>	<b>150,220</b>	<b>142,786</b>

Notes: a This means enrolling in a course that is higher than existing highest qualification. For those who have not completed Year 12, this means attaining a minimum of a certificate II, which is treated as Year 12 equivalent.

b International (excluding citizens of New Zealand who are treated as domestic full-fee paying) full-fee paying students and other revenue from sub-contracted, auspicing, partnership or similar arrangements.

Source: National VET Provider Collection.

# Appendix C: Outcome data

**Table C1 Key characteristics of graduates aged 15–19 years from the Student Outcomes Survey sample**

	Pre-reform cohort <sup>a</sup>		Post-reform cohort <sup>b</sup>		Difference-in-differences
	Victoria	NSW	Victoria	NSW	
Employment status prior to study (%)					
Employed full-time	5.009	6.261	2.801	5.562	-1.508
Employed part-time	53.168	46.807	50.487	39.328	4.798
Not employed	41.823	46.932	46.712	55.11	-3.290
Casual employment for those employed prior to study (%)	81.201	75.551	74.217	81.929	-13.361**
Highest prior qualification level (%)					
Less than Year 12	39.463	46.485	37.999	47.667	-2.646
Year 12 or equivalent	45.09	45.253	44.046	39.123	5.085
Cert. III & IV	11.371	7.128	14.391	11.184	-1.037
Diploma and above	4.076	1.134	3.564	2.026	-1.403
Occupations prior to study for those employed (%)					
Managers	0.831	1.092	1.39	1.556	0.096
Professionals	0.069	0.879	1.707	0	2.518***
Technical and trade workers	4.418	2.142	4.871	4.823	-2.228
Community and personal services	16.56	16.511	18.136	15.628	2.460
Clerical and administrative	4.504	7.556	2.747	5.563	0.235
Sales	43.701	48.539	39.647	47.59	-3.106
Machinery operators and drivers	3.649	2.714	1.79	1.58	-0.724
Labourers	26.269	20.567	29.711	23.26	0.750
Industry prior to study for those employed (%)					
Primary industries	2.987	1.841	1.768	2.394	-1.771
Manufacturing and construction	5.541	3.15	9.213	4.905	1.917
Retail and hospitality	77.922	77.71	71.022	73.506	-2.696
Business services	1.077	1.287	1.409	1.406	0.214
Administrative services	2.307	4.606	1.198	3.445	0.052
Health and education	4.919	5.996	4.272	4.478	0.872
Professional, scientific and technical	0.067	1.29	2.305	5.366	-1.839
Other	5.182	4.12	8.812	4.5	3.251
Fields of study (%)					
Natural and physical sciences	0.947	0.149	0.436	0.767	-1.128*
Information technology	3.213	6.816	3.989	3.914	3.679*
Engineering and related technologies	12.929	6.527	11.625	6.453	-1.229
Architecture and building	7.366	1.679	6.267	5.473	-4.893**
Agriculture, environmental and related	2.401	2.353	2.103	4.267	-2.212
Health	4.333	8.2	4.809	9.826	-1.151
Education	0.06	0	0.276	0	0.216
Management and commerce	30.597	34.786	20.938	25.841	-0.714
Society and culture	6.269	9.286	17.257	13.761	6.512**
Creative arts	6.068	7.221	11.719	9.406	3.465
Food, hospitality and personal services	17.382	8.404	12.25	10.516	-7.244**
Mixed field programs	8.435	14.579	8.33	9.775	4.699

	Pre-reform cohort <sup>a</sup>		Post-reform cohort <sup>b</sup>		Difference-in-differences
	Victoria	NSW	Victoria	NSW	
Qualification level completed (%)					
Cert. I & II	37.687	48.637	35.014	49.718	-3.755
Cert. III & IV	42.499	36.004	37.486	40.407	-9.416**
Diploma and above (%)	19.814	15.359	27.501	9.875	13.171***

Notes: \*\*\*significant at 1%; \*\*significant at 5%; \*significant at 10%.

a Pre-reform cohort is limited to those who commenced their course in January or February 2008 and were observed to have completed by December 2009 (using information from the 2009 and 2010 Student Outcome Surveys).

b The post-reform cohort is limited to those who commenced their course in January or February 2010 and were observed to have completed by December 2011 (using the information from the 2011 and 2012 Student Outcome Surveys).

**Table C2 Key characteristics of graduates aged 20–24 years from the Student Outcomes Survey sample**

	Pre-reform cohort <sup>a</sup>		Post-reform cohort <sup>b</sup>		Difference-in-differences
	Victoria	NSW	Victoria	NSW	
Employment status prior to study (%)					
Employed full-time	29.199	41.146	21.969	30.517	3.400
Employed part-time	45.382	34.823	48.954	32.594	5.801
Not employed	25.418	24.031	29.076	36.89	-9.201
Casual employment for those employed prior to study (%)	52.482	45.894	60.611	49.7	4.323
Highest prior qualification level (%)					
Less than Year 12	15.16	14.128	6.878	12.877	-7.031
Year 12 or equivalent	57.026	45.474	51.249	45.298	-5.600
Cert. III & IV	23.001	38.912	31.568	39.464	8.014
Diploma and above	4.813	1.486	10.305	2.361	4.617
Occupations prior to study for those employed (%)					
Managers	5.074	2.828	3.076	5.338	-4.507
Professionals	2.294	4.938	2.398	4.706	0.337
Technical and trade workers	8.573	17.317	5.492	17.525	-3.289
Community and personal services	12.758	20.016	28.777	18.875	17.160***
Clerical and administrative	9.938	15.532	10.999	14.271	2.322
Sales	35.572	24.646	31.434	22.733	-2.224
Machinery operators and drivers	5.264	5.204	2.867	3.283	-0.476
Labourers	20.527	9.517	14.957	13.269	-9.322
Industry prior to study for those employed (%)					
Primary industries	3.547	2.839	2.38	1.045	0.626
Manufacturing and construction	15.102	16.472	8.958	19.338	-9.010
Retail and hospitality	59.462	46.045	57.032	46.472	-2.857
Business services	1.876	3.148	2.786	2.309	1.749
Administrative services	5.494	9.094	5.421	4.244	4.777
Health and education	4.741	12.875	10.043	16.515	1.662
Professional, scientific and technical	3.291	3.589	2.863	4.656	-1.494
Other	6.487	5.938	10.517	5.421	4.547
Fields of study (%)					
Natural and physical sciences	1.018	0.344	0.631	1.222	-1.265
Information technology	6.968	9.111	5.17	8.847	-1.534
Engineering and related technologies	7.927	8.935	11.624	7.259	5.373
Architecture and building	2.779	7.584	5.999	7.028	3.777
Agriculture, environmental and related	4.529	1.273	3.775	2.925	-2.405
Health	4.128	5.499	8.87	5.772	4.470
Education	0.223	0	0.034	0	-0.189
Management and commerce	41.538	33.693	24.006	25.209	-9.047
Society and culture	10.798	14.816	13.252	16.309	0.961
Creative arts	13.269	10.947	15.359	12.045	0.992
Food, hospitality and personal services	4.365	4.347	8.827	5.122	3.687
Mixed field programs	2.46	3.45	2.451	8.261	-4.820*
Qualification level completed (%)					
Cert. I & II	1.937	3.725	1.463	2.801	0.450
Cert. III & IV	54.387	55.822	40.727	56.867	-14.704**
Diploma and above (%)	43.676	40.452	57.809	40.332	14.254**

Notes: \*\*\*significant at 1%; \*\*significant at 5%; \*significant at 10%.

a Pre-reform cohort is limited to those who commenced their course in January or February 2008 and were observed to have completed by December 2009 (using information from the 2009 and 2010 Student Outcome Surveys).

b The post-reform cohort is limited to those who commenced their course in January or February 2010 and were observed to have completed by December 2011 (using the information from the 2011 and 2012 Student Outcome Surveys).

**Table C3 Key characteristics of diploma graduates aged 25 years and over from the Student Outcomes Survey sample**

	Pre-reform cohort <sup>a</sup>		Post-reform cohort <sup>b</sup>		Difference-in-differences
	Victoria	NSW	Victoria	NSW	
Employment status prior to study (%)					
Employed full-time	60.395	48.767	52.182	44.046	-3.492
Employed part-time	23.795	23.738	28.325	29.346	-1.078
Not employed	15.809	27.494	19.492	26.608	4.570
Casual employment for those employed prior to study (%)	19.487	33.244	25.931	28.333	11.355*
Highest prior qualification level (%)					
Less than year 12	12.636	5.938	9.162	5.567	-3.102
Year 12 or equivalent	11.373	11.288	18.936	5.789	13.062***
Cert. III & IV	30.052	34.343	43.695	40.167	7.819
Diploma and above	45.94	48.431	28.207	48.477	-17.779***
Occupations prior to study for those employed (%)					
Managers	16.636	10.798	12.708	16.125	-9.255*
Professionals	19.184	16.937	17.595	22.369	-7.021
Technical and trade workers	14.657	17.745	15.332	9.018	9.402
Community and personal services	13.915	14.736	19.111	17.617	2.314
Clerical and administrative	15.682	22.943	21.563	15.658	13.166**
Sales	7.092	6.341	5.481	10.283	-5.553
Machinery operators and drivers	4.556	5.084	5.961	2.014	4.475
Labourers	8.278	5.416	2.249	6.915	-7.528**
Industry prior to study for those employed (%)					
Primary industries	1.887	3.85	2.007	3.576	0.395
Manufacturing and construction	20.423	19.586	12.392	11.544	0.010
Retail and hospitality	18.593	27.289	23.73	23.238	9.188
Business services	3.871	5.133	5.323	4.397	2.189
Administrative services	12.822	7.722	9.758	13.058	-8.401*
Health and education	28.221	18.224	36.538	29.863	-3.322
Professional, scientific and technical	4.333	9.314	4.91	9.957	-0.066
Other	9.85	8.882	5.341	4.366	0.007
Fields of study (%)					
Natural and physical sciences	1.733	1.643	0.281	1.507	-1.317
Information technology	4.862	5.853	3.028	4.192	-0.174
Engineering and related technologies	13.472	13.005	4.579	7.497	-3.384
Architecture and building	3.987	2.866	8.803	1.869	5.813*
Agriculture, environmental and related	3.49	2.706	4.45	1.727	1.938
Health	4.157	7.483	15.648	3.082	15.892***
Education	3.389	0	1.857	0.793	-2.325**
Management and commerce	46.232	38.755	31.757	39.777	-15.497***
Society and culture	12.047	18.42	21.531	27.81	0.094
Creative arts	5.299	8.132	6.067	10.841	-1.940
Food, hospitality and personal services	0.499	0.69	1.618	0.515	1.294
Mixed field programs	0.835	0.448	0.38	0.389	-0.395

Notes: \*\*\*significant at 1%; \*\*significant at 5%; \*significant at 10%.

a Pre-reform cohort is limited to those who commenced their course in January or February 2008 and were observed to have completed by December 2009 (using information from the 2009 and 2010 Student Outcome Surveys).

b The post-reform cohort is limited to those who commenced their course in January or February 2010 and were observed to have completed by December 2011 (using the information from the 2011 and 2012 Student Outcome Surveys).

**Table C4 Difference-in-differences regression estimates of VTG impacts on graduate employment, by age cohort (robust standard error)**

	15–19 years		20–24 years who completed a higher level course		25 years and older who completed a diploma course or above		All	
	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.
Victoria	0.006	(0.024)	0.005	(0.031)	0.023	(0.027)	0.010	(0.015)
Post-reform cohort (2010 entry)	-0.012	(0.022)	0.049*	(0.028)	0.016	(0.026)	0.013	(0.014)
Victoria x post-reform cohort	0.015	(0.032)	-0.018	(0.040)	-0.016	(0.035)	-0.002	(0.020)
Study characteristics								
Private provider	-0.036	(0.034)	0.003	(0.046)	0.018	(0.027)	-0.006	(0.019)
Field of study (1-digit ASCED)								
Course field of study (ref. case: management and commerce)								
Natural and physical sciences	-0.130*	(0.074)	0.032	(0.082)	-0.227**	(0.098)	-0.113**	(0.054)
Information technology	-0.130***	(0.041)	-0.091*	(0.047)	-0.046	(0.050)	-0.098***	(0.026)
Engineering and related technologies	0.026	(0.033)	0.046	(0.047)	0.014	(0.038)	0.034	(0.022)
Architecture and building	0.096**	(0.046)	0.057	(0.052)	0.023	(0.055)	0.066**	(0.029)
Agriculture	-0.017	(0.046)	0.022	(0.073)	0.033	(0.063)	0.006	(0.033)
Health	-0.030	(0.036)	0.021	(0.044)	0.056*	(0.032)	0.006	(0.021)
Education	0.103	(0.114)	-0.315	(0.263)	0.026	(0.055)	0.011	(0.055)
Society and culture	0.010	(0.026)	0.026	(0.031)	0.058**	(0.025)	0.026*	(0.015)
Creative arts	-0.108***	(0.030)	-0.044	(0.035)	-0.083**	(0.041)	-0.081***	(0.020)
Food	-0.076***	(0.028)	0.035	(0.048)	-0.152	(0.099)	-0.045**	(0.023)
Mixed field programs	-0.165***	(0.033)	-0.173***	(0.051)	0.041	(0.128)	-0.155***	(0.027)
Course level (ref. case: certificate I & II)								
Cert. III & IV	0.002	(0.021)	0.118	(0.076)	-	-	-0.010	(0.018)
Diploma and above	-0.017	(0.029)	0.171**	(0.077)	-	-	0.005	(0.022)
Received recognised prior learning	-0.030*	(0.016)	0.013	(0.021)	-0.002	(0.021)	-0.011	(0.011)
Socio-economic variables								
Area of residence (ref. case: metropolitan)								
Inner and outer regional	-0.003	(0.019)	-0.027	(0.024)	0.021	(0.019)	-0.002	(0.012)
Remote and very remote	-0.013	(0.082)	0.041	(0.152)	-0.131	(0.167)	-0.009	(0.066)
SEIFA index of disadvantage (ref. case: third least disadvantaged)								
Middle disadvantage	0.009	(0.022)	-0.000	(0.028)	0.027	(0.021)	0.011	(0.014)
Third most disadvantaged	-0.037*	(0.020)	-0.009	(0.025)	-0.031	(0.021)	-0.033***	(0.012)
Male	-0.033*	(0.019)	-0.053**	(0.024)	0.001	(0.020)	-0.023*	(0.012)
Indigenous	0.052	(0.048)	-0.074	(0.055)	-0.121	(0.111)	-0.001	(0.037)
Non-English speaking background	-0.059**	(0.027)	-0.078**	(0.034)	-0.023	(0.026)	-0.055***	(0.017)
Has a disability	-0.100***	(0.032)	-0.051	(0.042)	-0.145***	(0.031)	-0.110***	(0.020)
Highest prior qualification (ref. case: less than Year 12 or equiv.) <sup>a</sup>								
Year 12 or equiv.	0.044*	(0.022)	-0.026	(0.041)	0.032	(0.039)	0.028*	(0.015)
Certificate III & IV	0.057*	(0.032)	-0.048	(0.043)	0.049	(0.033)	0.028	(0.018)
Diploma and above	0.010	(0.054)	-0.071	(0.067)	0.006	(0.033)	-0.007	(0.021)
Country of birth (ref. case: Australia)								
Other main English speaking	-0.096**	(0.047)	-0.015	(0.064)	0.017	(0.028)	-0.022	(0.023)
Non-English speaking country	-0.108***	(0.039)	-0.052	(0.040)	-0.057*	(0.029)	-0.071***	(0.020)
Received income support while studying	-0.052***	(0.019)	0.006	(0.025)	0.019	(0.033)	-0.025*	(0.014)
Employed or in own business while studying	0.265***	(0.020)	0.263***	(0.030)	0.196***	(0.024)	0.245***	(0.014)

	15–19 years		20–24 years who completed a higher level course		25 years and older who completed a diploma course or above		All	
	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.
Age for 15–19 (ref. case: 15)								
16	0.058	(0.079)	-	-	-	-	-	-
17	0.069	(0.078)	-	-	-	-	-	-
18	0.071	(0.079)	-	-	-	-	-	-
19	0.043	(0.080)	-	-	-	-	-	-
Age for 20–24 (ref. case: 20)								
21	-	-	-0.008	(0.026)	-	-	-	-
22	-	-	-0.019	(0.031)	-	-	-	-
23	-	-	0.021	(0.031)	-	-	-	-
24	-	-	-0.019	(0.044)	-	-	-	-
Age for 25+ (ref. case: 25–34)								
35–44	-	-	-	-	0.050**	(0.021)	-	-
45–54	-	-	-	-	0.016	(0.023)	-	-
55–65	-	-	-	-	-0.014	(0.032)	-	-
65+	-	-	-	-	-0.116	(0.116)	-	-
Age for All (ref. case: 15–19)								
20–24	-	-	-	-	-	-	-0.018	(0.015)
25+	-	-	-	-	-	-	0.034	(0.021)
Employment prior to study								
Employment status (ref. case: out of work)								
Employed full-time	0.249***	(0.076)	0.341***	(0.096)	0.327***	(0.077)	0.292***	(0.047)
Employed part-time	0.278***	(0.072)	0.359***	(0.097)	0.254***	(0.079)	0.276***	(0.047)
Casually employed <sup>b</sup>	-0.036	(0.025)	-0.027	(0.028)	0.007	(0.024)	-0.010	(0.015)
Occupation (1-digit ANZSCO) prior to study (ref. case: labourer)								
Managers	0.085	(0.082)	-0.059	(0.066)	0.131**	(0.057)	0.048*	(0.027)
Professionals	0.050	(0.112)	-0.024	(0.072)	0.118**	(0.058)	0.038	(0.027)
Technicians and trades workers	0.125**	(0.054)	-0.042	(0.054)	0.122**	(0.061)	0.043	(0.027)
Community and personal service workers	0.023	(0.033)	-0.015	(0.043)	0.107*	(0.059)	0.027	(0.023)
Clerical and administrative workers	-0.093	(0.060)	-0.057	(0.050)	0.106*	(0.059)	-0.007	(0.026)
Sales workers	0.054**	(0.026)	-0.036	(0.040)	0.083	(0.066)	0.036*	(0.020)
Machinery operators and drivers	0.100*	(0.058)	-0.152*	(0.084)	0.086	(0.076)	0.001	(0.040)
Industry of employment (1-digit ANZSIC) prior to study (ref. case: primary industry)								
Manufacturing and construction	-0.081	(0.079)	-0.113	(0.074)	0.016	(0.062)	-0.059	(0.040)
Retail and hospitality	-0.034	(0.064)	-0.149**	(0.066)	0.053	(0.065)	-0.037	(0.038)
Business services	-0.032	(0.108)	-0.083	(0.091)	0.055	(0.074)	-0.005	(0.049)
Administrative services	-0.084	(0.089)	-0.157**	(0.078)	0.018	(0.066)	-0.077*	(0.043)
Health and education	-0.077	(0.078)	-0.117	(0.072)	0.043	(0.064)	-0.040	(0.040)
Professional	0.025	(0.107)	-0.156	(0.099)	0.074	(0.073)	-0.023	(0.049)
Other	-0.069	(0.073)	-0.181**	(0.081)	0.083	(0.068)	-0.052	(0.043)

Notes: \*\*\*significant at 1%; \*\*significant at 5% \*significant at 10%.

Estimates were derived using all available observations. For categorical variables with missing values, an 'unknown' category was also included in the estimation. Estimates for the unknown coefficients are not estimated to save space.

a Certificate II is treated as equivalent to Year 12.

b Treated as those who do not receive both holiday and sick leave.



**Table C5 Difference-in-differences regression estimates of VTG impacts on graduate full-time employment, by age cohort (robust standard error)**

	15–19 years		20–24 years who completed a higher level course		25 years and older who completed a diploma course or above		All	
	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.
Victoria	-0.064***	(0.020)	-0.005	(0.031)	-0.021	(0.028)	-0.028*	(0.015)
Post-reform cohort (2010 entry)	-0.012	(0.020)	0.029	(0.029)	0.008	(0.026)	0.011	(0.014)
Victoria x post-reform cohort	0.054*	(0.028)	-0.052	(0.041)	-0.023	(0.036)	-0.005	(0.020)
Study characteristics								
Private provider	-0.051*	(0.030)	0.059	(0.052)	0.032	(0.031)	0.004	(0.020)
Field of study (1-digit ASCED)								
Course field of study (ref. case: management and commerce)								
Natural and physical sciences	-0.038	(0.078)	-0.002	(0.077)	-0.231***	(0.058)	-0.121***	(0.043)
Information technology	-0.116***	(0.033)	-0.109***	(0.039)	-0.015	(0.044)	-0.094***	(0.022)
Engineering and related technologies	0.096***	(0.032)	0.098*	(0.051)	0.025	(0.041)	0.092***	(0.023)
Architecture and building	0.221***	(0.051)	0.143**	(0.065)	0.042	(0.060)	0.143***	(0.034)
Agriculture	0.027	(0.044)	0.082	(0.077)	-0.010	(0.070)	0.021	(0.033)
Health	-0.085***	(0.029)	-0.008	(0.052)	-0.061	(0.041)	-0.064***	(0.021)
Education	-0.065	(0.098)	-0.135**	(0.065)	-0.046	(0.068)	-0.020	(0.058)
Society and culture	-0.037	(0.025)	-0.021	(0.033)	-0.005	(0.028)	-0.027*	(0.016)
Creative arts	-0.141***	(0.024)	-0.149***	(0.031)	-0.174***	(0.040)	-0.159***	(0.017)
Food	-0.050**	(0.024)	0.010	(0.059)	-0.117	(0.074)	-0.040*	(0.021)
Mixed field programs	-0.104***	(0.023)	-0.215***	(0.037)	0.045	(0.103)	-0.125***	(0.019)
Course level (ref. case: certificate I & II)								
Cert. III & IV	0.012	(0.018)	0.124*	(0.064)	-	-	0.015	(0.016)
Diploma and above	-0.025	(0.026)	0.165**	(0.068)	-	-	0.010	(0.020)
Received recognised prior learning	0.005	(0.014)	0.076***	(0.022)	0.061***	(0.022)	0.034***	(0.010)
Socio-economic variables								
Area of residence (ref. case: metropolitan)								
Inner and outer regional	0.001	(0.017)	-0.023	(0.025)	-0.000	(0.022)	-0.004	(0.012)
Remote and very remote	0.016	(0.069)	0.021	(0.125)	0.017	(0.084)	0.009	(0.054)
SEIFA index of disadvantage (ref. case: Third least disadvantaged)								
Middle disadvantage	0.016	(0.020)	0.003	(0.030)	-0.007	(0.023)	0.001	(0.014)
Third most disadvantaged	-0.011	(0.017)	0.015	(0.025)	-0.046**	(0.022)	-0.019	(0.012)
Male	0.030*	(0.016)	-0.040*	(0.023)	0.042*	(0.021)	0.022*	(0.011)
Indigenous	0.079*	(0.045)	0.067	(0.079)	0.038	(0.090)	0.085**	(0.035)
Non-English speaking background	-0.055**	(0.022)	-0.052*	(0.030)	0.023	(0.030)	-0.036**	(0.015)
Has a disability	-0.073***	(0.022)	-0.039	(0.036)	-0.116***	(0.030)	-0.076***	(0.016)
Highest prior qualification (ref. case: less than Year 12 or equiv.) <sup>a</sup>								
Year 12 or equiv.	0.038*	(0.020)	-0.042	(0.039)	-0.005	(0.038)	0.034**	(0.014)
Certificate III&IV	0.046	(0.028)	-0.052	(0.041)	0.038	(0.031)	0.037**	(0.017)
Diploma and above	0.015	(0.051)	-0.174***	(0.059)	-0.002	(0.031)	-0.005	(0.020)
Country of birth (ref. case: Australia)								
Other main English speaking	-0.067*	(0.037)	0.071	(0.080)	0.065**	(0.030)	0.021	(0.023)
Non-English speaking country	-0.033	(0.030)	-0.018	(0.032)	-0.058*	(0.033)	-0.034*	(0.018)
Received income support while studying	-0.024	(0.016)	-0.047**	(0.023)	-0.054*	(0.032)	-0.035***	(0.012)
Employed or in own business while studying	0.018	(0.018)	0.101***	(0.030)	0.139***	(0.027)	0.066***	(0.013)

	15–19 years		20–24 years who completed a higher level course		25 years and older who completed a diploma course or above		All	
	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.
Age for 15–19 (ref. case: 15)								
16	0.088**	(0.043)	-	-	-	-	-	-
17	0.122***	(0.041)	-	-	-	-	-	-
18	0.176***	(0.044)	-	-	-	-	-	-
19	0.143***	(0.044)	-	-	-	-	-	-
Age for 20–24 (ref. case: 20)								
21	-	-	-0.010	(0.028)	-	-	-	-
22	-	-	-0.005	(0.030)	-	-	-	-
23	-	-	0.023	(0.035)	-	-	-	-
24	-	-	0.036	(0.038)	-	-	-	-
Age for 25+ (ref. case: 25–34)								
35–44	-	-	-	-	0.031	(0.023)	-	-
45–54	-	-	-	-	0.037	(0.024)	-	-
55–65	-	-	-	-	-0.004	(0.032)	-	-
65+	-	-	-	-	-0.051	(0.115)	-	-
Age for all (ref. case: 15–19)								
20–24	-	-	-	-	-	-	-0.018	(0.014)
25+	-	-	-	-	-	-	0.062***	(0.021)
Employment prior to study								
Employment status (ref. case: out of work)								
Employed full-time	0.343***	(0.079)	0.222**	(0.088)	0.420***	(0.083)	0.398***	(0.045)
Employed part-time	0.001	(0.071)	-0.019	(0.085)	-0.176**	(0.084)	-0.027	(0.044)
Casually employed <sup>b</sup>	-0.063**	(0.031)	-0.098***	(0.034)	0.001	(0.031)	-0.063***	(0.018)
Occupation (1-digit ANZSCO) prior to study (ref. case: labourer)								
Managers	0.215**	(0.092)	-0.065	(0.080)	0.079	(0.060)	0.090***	(0.033)
Professionals	-0.083	(0.084)	-0.004	(0.078)	0.058	(0.059)	0.050	(0.032)
Technicians and trades workers	0.169**	(0.069)	-0.004	(0.065)	0.075	(0.062)	0.054*	(0.033)
Community and personal service workers	0.007	(0.032)	-0.004	(0.054)	0.011	(0.061)	0.005	(0.025)
Clerical and administrative workers	0.011	(0.059)	0.057	(0.060)	0.047	(0.058)	0.036	(0.029)
Sales workers	0.043	(0.026)	-0.051	(0.048)	0.098	(0.067)	0.024	(0.022)
Machinery operators and drivers	0.131*	(0.077)	-0.054	(0.095)	-0.004	(0.091)	0.023	(0.049)
Industry of employment (1-digit ANZSIC) prior to study (ref. case: primary industry)								
Manufacturing and construction	-0.093	(0.088)	0.005	(0.117)	0.016	(0.058)	-0.028	(0.048)
Retail and hospitality	-0.090	(0.074)	-0.136	(0.110)	0.026	(0.058)	-0.057	(0.045)
Business services	-0.130	(0.112)	-0.146	(0.133)	0.052	(0.070)	-0.040	(0.057)
Administrative services	-0.118	(0.095)	-0.021	(0.119)	0.017	(0.062)	-0.034	(0.050)
Health and education	-0.109	(0.085)	-0.096	(0.117)	0.014	(0.058)	-0.043	(0.047)
Professional	-0.122	(0.124)	-0.107	(0.132)	-0.018	(0.067)	-0.093*	(0.056)
Other	-0.115	(0.080)	-0.098	(0.119)	0.036	(0.063)	-0.056	(0.048)

Notes: \*\*\*significant at 1%, \*\*significant at 5% \*significant at 10%.

Estimates were derived using all available observations. For categorical variables with missing values, an 'unknown' category was also included in the estimation. Estimates for the unknown coefficients are not estimated to save space.

a Certificate II is treated as equivalent to Year 12.

b Treated as those who do not receive both holiday and sick leave.

**Table C6 Difference-in-differences regression estimates of VTG impacts on graduate course satisfaction, by age cohort (robust standard error)**

	15–19 years		20–24 years who completed a higher-level course		25 years and older who completed a diploma course or above		All	
	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.
Victoria	-0.029	(0.018)	-0.046**	(0.023)	-0.045*	(0.025)	-0.035***	(0.012)
Post-reform cohort (2010 entry)	-0.016	(0.016)	-0.018	(0.021)	-0.021	(0.022)	-0.012	(0.011)
Victoria x post-reform cohort	0.040*	(0.024)	0.002	(0.032)	0.030	(0.033)	0.018	(0.016)
Study characteristics								
Private provider	-0.000	(0.024)	0.081**	(0.032)	0.028	(0.029)	0.026*	(0.016)
Field of study (1-digit ASCED)								
Course field of study (ref. case: management and commerce)								
Natural and physical sciences	0.072	(0.061)	-0.009	(0.085)	0.010	(0.061)	0.022	(0.039)
Information technology	-0.061	(0.038)	0.063**	(0.031)	-0.033	(0.044)	-0.019	(0.021)
Engineering and related technologies	-0.015	(0.026)	0.038	(0.033)	-0.037	(0.041)	-0.007	(0.018)
Architecture and building	-0.005	(0.034)	-0.033	(0.045)	-0.117**	(0.059)	-0.032	(0.024)
Agriculture	0.010	(0.035)	-0.057	(0.062)	-0.048	(0.064)	-0.016	(0.027)
Health	-0.000	(0.024)	-0.022	(0.042)	-0.046	(0.041)	-0.019	(0.018)
Education	0.142***	(0.038)	0.155*	(0.081)	0.009	(0.062)	0.037	(0.053)
Society and culture	0.043**	(0.018)	-0.012	(0.027)	-0.001	(0.024)	0.016	(0.013)
Creative arts	0.004	(0.024)	-0.009	(0.028)	-0.004	(0.035)	-0.001	(0.016)
Food	0.018	(0.020)	-0.069	(0.047)	-0.221*	(0.126)	-0.010	(0.018)
Mixed field programs	0.030	(0.022)	0.041	(0.035)	0.063	(0.108)	0.019	(0.018)
Course level (ref. case: certificate I & II)								
Cert. III & IV	-0.041***	(0.015)	0.010	(0.052)	-	-	-0.040***	(0.013)
Diploma and above	-0.039*	(0.023)	0.003	(0.055)	-	-	-0.034**	(0.017)
Received recognised prior learning	-0.002	(0.012)	-0.044***	(0.017)	-0.014	(0.020)	-0.014*	(0.009)
Socioeconomic variables								
Area of residence (ref. case: metropolitan)								
Inner and outer regional	-0.002	(0.013)	-0.002	(0.020)	0.038*	(0.020)	0.011	(0.010)
Remote and very remote	-0.045	(0.064)	0.094***	(0.029)	-0.238	(0.219)	-0.030	(0.048)
SEIFA index of disadvantage (ref. case: third least disadvantaged)								
Middle disadvantage	0.015	(0.016)	0.010	(0.022)	-0.012	(0.023)	0.004	(0.011)
Third most disadvantaged	0.015	(0.015)	-0.009	(0.020)	-0.006	(0.019)	0.003	(0.010)
Male	-0.011	(0.015)	-0.035*	(0.019)	-0.008	(0.020)	-0.013	(0.010)
Indigenous	-0.037	(0.034)	0.042	(0.038)	-0.025	(0.074)	-0.019	(0.027)
Non-English speaking background	-0.016	(0.019)	0.005	(0.026)	0.070***	(0.025)	0.009	(0.013)
Has a disability	-0.041*	(0.024)	0.044	(0.029)	-0.005	(0.028)	-0.009	(0.016)
Highest prior qualification (ref. case: less than Year 12 or equiv.) <sup>a</sup>								
Year 12 or equiv.	0.016	(0.016)	-0.032	(0.028)	-0.027	(0.038)	-0.011	(0.011)
Certificate II & IV	-0.031	(0.025)	0.004	(0.030)	0.005	(0.031)	-0.003	(0.014)
Diploma and above	-0.014	(0.051)	0.094**	(0.038)	-0.012	(0.031)	-0.005	(0.018)
Country of birth (ref. case: Australia)								
Other main English speaking	0.046	(0.032)	-0.010	(0.057)	0.014	(0.030)	0.020	(0.020)
Non-English speaking country	0.053**	(0.024)	-0.010	(0.028)	-0.019	(0.027)	0.019	(0.015)
Received income support while studying	-0.023	(0.014)	0.070***	(0.018)	-0.005	(0.026)	0.003	(0.010)
Employed or in own business while studying	0.009	(0.014)	0.052**	(0.022)	0.006	(0.021)	0.015	(0.010)

	15–19 years		20–24 years who completed a higher-level course		25 years and older who completed a diploma course or above		All	
	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.
Age for 15–19 (ref. case: 15)								
16	-0.042	(0.050)	-	-	-	-	-	-
17	0.013	(0.048)	-	-	-	-	-	-
18	-0.005	(0.049)	-	-	-	-	-	-
19	-0.027	(0.050)	-	-	-	-	-	-
Age for 20–24 (ref. case: 20)								
21	-	-	-0.003	(0.022)	-	-	-	-
22	-	-	0.019	(0.022)	-	-	-	-
23	-	-	0.016	(0.027)	-	-	-	-
24	-	-	0.012	(0.034)	-	-	-	-
Age for 25+ (ref. case: 25–34)								
35–44	-	-	-	-	-0.003	(0.021)	-	-
45–54	-	-	-	-	0.014	(0.023)	-	-
55–65	-	-	-	-	0.023	(0.033)	-	-
65+	-	-	-	-	-0.022	(0.110)	-	-
Age for all (ref. case: 15–19)								
20–24	-	-	-	-	-	-	0.008	(0.012)
25+	-	-	-	-	-	-	-0.012	(0.017)
Employment prior to study								
Employment status (ref. case: out of work)								
Employed full-time	0.027	(0.056)	-0.096	(0.074)	-0.043	(0.074)	-0.022	(0.038)
Employed part-time	0.023	(0.051)	-0.080	(0.072)	-0.084	(0.077)	-0.035	(0.037)
Casually employed <sup>b</sup>	-0.000	(0.022)	-0.002	(0.024)	0.038	(0.024)	0.010	(0.013)
Occupation (1-digit ANZSCO) prior to study (ref. case: labourer)								
Managers	0.034	(0.054)	0.032	(0.050)	0.013	(0.058)	-0.012	(0.027)
Professionals	-0.165	(0.115)	-0.025	(0.063)	-0.006	(0.058)	-0.058**	(0.028)
Technicians and trades workers	-0.061	(0.056)	0.043	(0.044)	0.067	(0.060)	0.010	(0.026)
Community and personal service workers	-0.043	(0.026)	-0.051	(0.037)	0.005	(0.057)	-0.038**	(0.019)
Clerical and administrative workers	-0.002	(0.039)	-0.078*	(0.042)	0.060	(0.055)	-0.008	(0.022)
Sales workers	-0.013	(0.020)	-0.037	(0.032)	0.039	(0.057)	-0.015	(0.016)
Machinery operators and drivers	-0.100	(0.068)	-0.096	(0.075)	0.037	(0.078)	-0.056	(0.039)
Industry of employment (1-digit ANZSIC) prior to study (ref. case: primary industry)								
Manufacturing and construction	-0.033	(0.053)	-0.083	(0.054)	0.008	(0.064)	-0.022	(0.032)
Retail and hospitality	-0.054	(0.042)	-0.099**	(0.047)	-0.003	(0.063)	-0.037	(0.029)
Business services	-0.073	(0.079)	-0.155*	(0.081)	-0.130	(0.080)	-0.121***	(0.046)
Administrative services	-0.046	(0.058)	-0.075	(0.056)	0.017	(0.066)	-0.012	(0.033)
Health and education	0.034	(0.049)	-0.070	(0.055)	-0.020	(0.064)	-0.028	(0.032)
Professional	-0.206*	(0.107)	-0.031	(0.062)	-0.002	(0.071)	-0.045	(0.041)
Other	-0.018	(0.051)	-0.181***	(0.065)	-0.027	(0.071)	-0.062*	(0.035)

Notes: \*\*\*significant at 1%, \*\*significant at 5% \*significant at 10%.

Estimates were derived using all available observations. For categorical variables with missing values, an 'unknown' category was also included in the estimation. Estimates for the unknown coefficients are not estimated to save space.

a Certificate II is treated as equivalent to Year 12.

b Treated as those who do not receive both holiday and sick leave.

**Table C7 Difference-in-differences regression estimates of VTG impacts on graduate income, by age cohort (robust standard error)**

	15–19 years		20–24 years who completed a higher-level course		25 years and older who completed a diploma course or above		All	
	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.
Victoria	-2646	(1856)	430	(2369)	-4392***	(1624)	-2721***	(1047)
Post-reform cohort (2010 entry)	1464	(1758)	2640	(1950)	1004	(1632)	1597	(1005)
Victoria x post-reform cohort	-8	(2424)	-2180	(3027)	1214	(2134)	468	(1407)
Study characteristics								
Private provider	-3508	(2689)	2905	(2557)	-754	(1921)	354	(1334)
Field of study (1-digit ASCED)								
Course field of study (ref. case: management and commerce)								
Natural and physical sciences	-3402	(3668)	1754	(4859)	-13607***	(2835)	-4771	(3407)
Information technology	3555	(4777)	6301	(4510)	-1765	(3272)	-107	(2289)
Engineering and related technologies	-428	(2615)	5118*	(3017)	8433***	(2183)	4587***	(1453)
Architecture and building	451	(2771)	3376	(3536)	-817	(3342)	169	(1706)
Agriculture	4322	(3117)	2767	(4016)	-4092	(3904)	-658	(2010)
Health	760	(2154)	1042	(3191)	7368***	(1759)	4612***	(1402)
Education	-2272	(5164)			1722	(2617)	2869	(2444)
Society and culture	1123	(2005)	3685	(2258)	-4322***	(1607)	-1662	(1135)
Creative arts	419	(2831)	-3780	(2896)	-15309***	(4831)	-7104***	(2159)
Food	-1708	(2653)	-3759	(2697)	-12579***	(4208)	-2990*	(1574)
Mixed field programs	-3092	(3913)	-8053**	(4045)	-5077	(4770)	-3352	(2996)
Course level (ref. case: certificate I & II)								
Cert. III & IV	3155*	(1676)	10329	(6335)	-	-	6102***	(1413)
Diploma and above	4471*	(2309)	12648*	(6605)	-	-	8837***	(1712)
Received recognised prior learning	1109	(1228)	2345	(1600)	4517***	(1437)	3135***	(809)
Socioeconomic variables								
Area of residence (ref. case: metropolitan)								
Inner and outer regional	-1402	(1395)	-774	(1659)	-1491	(1182)	-1210	(793)
Remote and very remote	-8343***	(2890)	13343*	(7050)	-571	(2860)	1290	(4588)
SEIFA index of disadvantage (ref. case: third least disadvantaged)								
Middle disadvantage	-1584	(1580)	-1689	(1979)	-467	(1371)	-863	(920)
Third most disadvantaged	-394	(1603)	1195	(1686)	932	(1233)	1014	(843)
Male	1364	(1723)	1154	(1923)	3967***	(1228)	3166***	(860)
Indigenous	14874***	(5129)	-2531	(3723)	1347	(4147)	7344**	(3477)
Non-English speaking background	6146**	(2479)	635	(2462)	2210	(1763)	2497**	(1271)
Has a disability	-3781	(3277)	-5134	(3229)	-3870*	(2254)	-3201*	(1646)
Highest prior qualification (ref. case: less than Year 12 or equiv.) <sup>a</sup>								
Year 12 or equiv.	1788	(1616)	486	(2942)	-566	(2737)	1544	(1168)
Certificate III & IV	892	(2126)	1177	(3170)	2279	(2243)	2296*	(1276)
Diploma and above	11461	(7171)	-800	(5054)	2514	(2258)	3354**	(1500)
Country of birth (ref. case: Australia)								
Other main English speaking	-1943	(2919)	414	(2801)	1857	(1734)	1756	(1414)
Non-English speaking country	-1355	(3805)	2852	(3600)	-6371***	(1943)	-5015***	(1545)
Received income support while studying	38	(1413)	-1831	(2198)	-4229*	(2563)	-1574	(1073)
Employed or in own business while studying	1070	(1440)	-1148	(2026)	3390**	(1565)	2075**	(935)

	15–19 years		20–24 years who completed a higher-level course		25 years and older who completed a diploma course or above		All	
	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.
Age for 15–19 (ref. case: 15)								
16	3830	(3541)	-	-	-	-	-	-
17	7440**	(3253)	-	-	-	-	-	-
18	7796**	(3217)	-	-	-	-	-	-
19	10039***	(3799)	-	-	-	-	-	-
Age for 20–24 (ref. case: 20)								
21	-	-	824	(2053)	-	-	-	-
22	-	-	2542	(2191)	-	-	-	-
23	-	-	-597	(2259)	-	-	-	-
24	-	-	3657	(2663)	-	-	-	-
Age for 25+ (ref. case: 25–34)								
35–44	-	-	-	-	3121**	(1328)	-	-
45–54	-	-	-	-	4318***	(1527)	-	-
55–65	-	-	-	-	2433	(1978)	-	-
65+	-	-	-	-	6043	(9636)	-	-
Age for all (ref. case: 15–19)								
20–24	-	-	-	-	-	-	3913***	(1169)
25+	-	-	-	-	-	-	12874***	(1638)
Employment prior to study								
Employment status (ref. case: out of work)								
Employed full-time	11497	(7715)	15897***	(5843)	8416	(6346)	10849***	(4186)
Employed part-time	9740	(7440)	13788**	(6110)	3371	(7000)	8777**	(4338)
Casually employed <sup>b</sup>	-154	(2085)	-978	(1801)	-966	(1849)	-927	(1110)
Occupation (1-digit ANZSCO) prior to study (ref. case: labourer)								
Managers	1724	(3744)	2171	(4435)	5230	(3581)	9310***	(1913)
Professionals	9065	(7297)	881	(4544)	1078	(3575)	6423***	(1946)
Technicians and trades workers	-1543	(4456)	6423*	(3558)	-2711	(3799)	2674	(1935)
Community and personal service workers	-1739	(3136)	3318	(3248)	-8041**	(3676)	-1067	(1750)
Clerical and administrative workers	1258	(3663)	6159*	(3495)	-1392	(3632)	3709**	(1784)
Sales workers	-1378	(2213)	3251	(2985)	-9269**	(4458)	-814	(1646)
Machinery operators and drivers	2737	(3861)	7863	(6169)	-6478	(4536)	1370	(2598)
Industry of employment (1-digit ANZSIC) prior to study (ref. case: primary industry)								
Manufacturing and construction	-1810	(4798)	7501	(6087)	-4177	(3220)	-592	(2639)
Retail and hospitality	-4807	(4449)	2994	(5738)	-6626**	(3335)	-4998*	(2581)
Business services	1441	(7418)	5227	(7022)	1342	(4017)	1169	(3189)
Administrative services	-8609*	(4968)	9198	(6246)	-2664	(3314)	-1181	(2730)
Health and education	-795	(6734)	6720	(6350)	-4201	(3330)	-2406	(2718)
Professional	-12736*	(6846)	8926	(7286)	3886	(3770)	1509	(3128)
Other	-4145	(6940)	4939	(6721)	-8214**	(4068)	-5988*	(3083)

Note: \*\*\*significant at 1%, \*\*significant at 5% \*significant at 10%.

Estimates were derived using all available observations. For categorical variables with missing values, an 'unknown' category was also included in the estimation. Estimates for the unknown coefficients are not estimated to save space.

a Certificate II is treated as equivalent to Year 12.

b Treated as those who do not receive both holiday and sick leave.

**Table C8 Difference-in-differences regression estimates of VTG impacts on graduate reported relevance of training, by age cohort (robust standard error)**

	15–19 years		20–24 years who completed a higher-level course		25 years and older who completed a diploma course or above		All	
	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.
Victoria	0.059*	(0.035)	-0.028	(0.045)	0.027	(0.034)	0.028	(0.021)
Post-reform cohort (2010 entry)	0.060*	(0.034)	0.018	(0.040)	0.037	(0.034)	0.039*	(0.020)
Victoria x post-reform cohort	-0.047	(0.048)	0.027	(0.058)	-0.039	(0.043)	-0.024	(0.028)
Study characteristics								
Private provider	0.164***	(0.044)	0.089	(0.059)	-0.046	(0.037)	0.072***	(0.025)
Field of study (1-digit ASCED)								
Course field of study (ref. case: management and commerce)								
Natural and physical sciences	-0.365**	(0.177)	0.332***	(0.116)	-0.226	(0.161)	-0.068	(0.101)
Information technology	-0.306***	(0.073)	-0.085	(0.080)	-0.162**	(0.071)	-0.199***	(0.042)
Engineering and related technologies	-0.126**	(0.051)	0.030	(0.068)	-0.010	(0.047)	-0.057*	(0.032)
Architecture and building	0.015	(0.063)	0.113*	(0.067)	-0.010	(0.061)	0.044	(0.036)
Agriculture	-0.049	(0.072)	0.078	(0.105)	-0.116	(0.078)	-0.024	(0.047)
Health	-0.124**	(0.049)	0.064	(0.065)	0.003	(0.043)	-0.034	(0.029)
Education	0.198**	(0.078)	-0.348***	(0.068)	0.049	(0.044)	0.048	(0.044)
Society and culture	-0.118***	(0.039)	0.021	(0.048)	0.058*	(0.031)	-0.028	(0.022)
Creative arts	-0.327***	(0.047)	-0.278***	(0.051)	-0.218***	(0.064)	-0.293***	(0.029)
Food	-0.048	(0.042)	0.066	(0.071)	0.116**	(0.046)	0.012	(0.033)
Mixed field programs	-0.312***	(0.053)	-0.298***	(0.103)	-0.316*	(0.188)	-0.285***	(0.045)
Course level (ref. case: certificate I & II)								
Cert. III & IV	0.046	(0.030)	-0.281**	(0.125)	-	-	0.013	(0.027)
Diploma and above	0.017	(0.042)	-0.277**	(0.127)	-	-	-0.008	(0.032)
Received recognised prior learning	0.062***	(0.024)	0.139***	(0.032)	0.129***	(0.031)	0.098***	(0.016)
Socioeconomic variables								
Area of residence (ref. case: metropolitan)								
Inner and outer regional	0.052*	(0.027)	-0.002	(0.035)	-0.002	(0.023)	0.019	(0.016)
Remote and very remote	0.063	(0.112)	0.119	(0.139)	-0.132	(0.209)	0.034	(0.084)
SEIFA index of disadvantage (ref. case: third least disadvantaged)								
Middle disadvantage	-0.072**	(0.032)	0.031	(0.041)	0.004	(0.027)	-0.027	(0.019)
Third most disadvantaged	-0.004	(0.030)	0.035	(0.036)	0.001	(0.025)	0.012	(0.017)
Male	-0.019	(0.030)	-0.065*	(0.036)	-0.013	(0.024)	-0.023	(0.017)
Indigenous	0.066	(0.072)	-0.066	(0.122)	-0.078	(0.104)	0.013	(0.053)
Non-English speaking background	0.043	(0.041)	0.030	(0.050)	0.031	(0.032)	0.036	(0.023)
Has a disability	0.030	(0.062)	-0.044	(0.068)	-0.095**	(0.043)	-0.027	(0.033)
Highest prior qualification (ref. case: less than Year 12 or equiv.) <sup>a</sup>								
Year 12 or equiv.	0.003	(0.035)	0.076	(0.060)	0.005	(0.052)	-0.016	(0.022)
Certificate III & IV	0.035	(0.046)	0.082	(0.063)	0.068	(0.043)	0.037	(0.025)
Diploma and above	-0.021	(0.090)	0.141	(0.100)	0.046	(0.044)	0.026	(0.029)
Country of birth (ref. case: Australia)								
Other main English speaking	-0.008	(0.079)	0.056	(0.089)	-0.043	(0.037)	-0.024	(0.032)
Non-English speaking country	0.092	(0.070)	-0.068	(0.066)	-0.085**	(0.038)	-0.041	(0.030)
Received income support while studying	0.017	(0.030)	-0.017	(0.037)	-0.080*	(0.044)	-0.017	(0.020)
Employed or in own business while studying	0.043	(0.027)	0.018	(0.041)	-0.004	(0.028)	0.021	(0.018)

	15–19 years		20–24 years who completed a higher-level course		25 years and older who completed a diploma course or above		All	
	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.
Age for 15–19 (ref. case: 15)								
16	0.031	(0.123)	-	-	-	-	-	-
17	-0.061	(0.121)	-	-	-	-	-	-
18	-0.029	(0.122)	-	-	-	-	-	-
19	-0.064	(0.123)	-	-	-	-	-	-
Age for 20–24 (ref. case: 20)								
21	-	-	-0.067*	(0.040)	-	-	-	-
22	-	-	-0.023	(0.044)	-	-	-	-
23	-	-	0.036	(0.046)	-	-	-	-
24	-	-	0.129**	(0.054)	-	-	-	-
Age for 25+ (ref. case: 25–34)								
35–44	-	-	-	-	0.001	(0.027)	-	-
45–54	-	-	-	-	-0.003	(0.029)	-	-
55–65	-	-	-	-	0.013	(0.040)	-	-
65+	-	-	-	-	0.090*	(0.046)	-	-
Age for All (ref. case: 15–19)								
20–24	-	-	-	-	-	-	0.039*	(0.022)
25+	-	-	-	-	-	-	0.157***	(0.031)
Employment prior to study								
Employment status (ref. case: out of work)								
Employed full-time	0.046	(0.113)	-0.198	(0.125)	0.032	(0.080)	0.016	(0.059)
Employed part-time	-0.000	(0.110)	-0.204	(0.126)	-0.075	(0.082)	-0.053	(0.059)
Casually employed <sup>b</sup>	0.005	(0.038)	-0.059	(0.041)	0.000	(0.031)	-0.018	(0.021)
Occupation (1-digit ANZSCO) prior to study (ref. case: labourer)								
Managers	0.043	(0.121)	-0.025	(0.091)	-0.116*	(0.068)	-0.050	(0.038)
Professionals	-0.006	(0.157)	0.031	(0.102)	-0.063	(0.068)	0.007	(0.037)
Technicians and trades workers	0.104	(0.085)	0.154**	(0.073)	-0.077	(0.069)	0.059	(0.038)
Community and personal service workers	-0.018	(0.047)	-0.026	(0.065)	-0.117*	(0.070)	-0.040	(0.032)
Clerical and administrative workers	0.065	(0.077)	0.018	(0.073)	-0.139**	(0.069)	-0.039	(0.036)
Sales workers	-0.071*	(0.038)	-0.052	(0.061)	-0.078	(0.079)	-0.071**	(0.029)
Machinery operators and drivers	-0.253***	(0.089)	-0.236**	(0.106)	-0.209**	(0.098)	-0.233***	(0.054)
Industry of employment (1-digit ANZSIC) prior to study (ref. case: primary industry)								
Manufacturing and construction	-0.046	(0.106)	0.071	(0.124)	-0.069	(0.061)	-0.016	(0.054)
Retail and hospitality	-0.133	(0.088)	-0.002	(0.117)	-0.104*	(0.062)	-0.077	(0.052)
Business services	-0.205	(0.142)	0.121	(0.138)	-0.045	(0.074)	-0.026	(0.064)
Administrative services	-0.109	(0.118)	0.012	(0.128)	-0.016	(0.062)	-0.024	(0.056)
Health and education	-0.019	(0.110)	0.129	(0.124)	-0.056	(0.061)	0.004	(0.054)
Professional	-0.231	(0.146)	0.045	(0.153)	-0.064	(0.074)	-0.064	(0.065)
Other	-0.051	(0.104)	0.078	(0.130)	-0.109	(0.069)	-0.025	(0.058)

Notes: \*\*\*significant at 1%, \*\*significant at 5% \*significant at 10%.

Estimates were derived using all available observations. For categorical variables with missing values, an 'unknown' category was also included in the estimation. Estimates for the unknown coefficients are not estimated to save space.

a Certificate II is treated as equivalent to Year 12.

b Treated as those who do not receive both holiday and sick leave.



**Table C9 Difference-in-differences regression estimates of VTG impacts on the probability of graduates being in ongoing employment, by age cohort (robust standard error)**

	15–19 years		20–24 years who completed a higher-level course		25 years and older who completed a diploma course or above		All	
	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.
Victoria	-0.042	(0.029)	0.031	(0.043)	-0.019	(0.031)	0.001	(0.019)
Post-reform cohort (2010 entry)	0.013	(0.029)	0.003	(0.038)	-0.015	(0.033)	0.009	(0.019)
Victoria x post-reform cohort	0.064	(0.041)	-0.053	(0.055)	-0.005	(0.041)	-0.007	(0.026)
Study characteristics								
Private provider	-0.032	(0.039)	0.046	(0.061)	0.005	(0.032)	-0.016	(0.024)
Field of study (1-digit ASCED)								
Course field of study (ref. case: management and commerce)								
Natural and physical sciences	0.011	(0.153)	0.139	(0.128)	-0.168	(0.109)	-0.010	(0.083)
Information technology	-0.156***	(0.058)	-0.182***	(0.068)	-0.028	(0.056)	-0.114***	(0.035)
Engineering and related technologies	0.121***	(0.045)	0.043	(0.067)	-0.018	(0.047)	0.084***	(0.030)
Architecture and building	0.206***	(0.063)	0.026	(0.069)	-0.009	(0.080)	0.103***	(0.040)
Agriculture	-0.054	(0.065)	0.041	(0.083)	-0.121*	(0.064)	-0.051	(0.040)
Health	-0.013	(0.044)	0.005	(0.063)	-0.063	(0.043)	-0.021	(0.027)
Education	-0.050	(0.087)	-0.322***	(0.066)	-0.030	(0.066)	-0.029	(0.059)
Society and culture	-0.038	(0.034)	-0.021	(0.044)	0.004	(0.032)	-0.014	(0.020)
Creative arts	-0.162***	(0.037)	-0.173***	(0.047)	-0.196***	(0.054)	-0.163***	(0.025)
Food	-0.052	(0.034)	-0.053	(0.071)	-0.015	(0.123)	-0.059**	(0.029)
Mixed field programs	-0.068*	(0.041)	-0.103	(0.085)	0.150*	(0.088)	-0.080**	(0.035)
Course level (ref. case: certificate I & II)								
Cert. III & IV	0.015	(0.027)	0.142	(0.106)	-	-	0.022	(0.023)
Diploma and above	-0.055	(0.038)	0.150	(0.109)	-	-	-0.005	(0.028)
Received recognised prior learning	-0.011	(0.021)	0.055*	(0.029)	0.015	(0.027)	0.012	(0.014)
Socioeconomic variables								
Area of residence (ref. case: metropolitan)								
Inner and outer regional	0.005	(0.025)	0.014	(0.033)	0.033	(0.022)	0.020	(0.015)
Remote and very remote	-0.154	(0.102)	0.032	(0.147)	-0.206	(0.196)	-0.083	(0.075)
SEIFA index of disadvantage (ref. case: third least disadvantaged)								
Middle disadvantage	0.008	(0.028)	0.041	(0.040)	-0.027	(0.025)	0.001	(0.018)
Third most disadvantaged	0.002	(0.026)	0.004	(0.033)	-0.001	(0.025)	-0.001	(0.016)
Male	0.040	(0.025)	-0.013	(0.034)	0.007	(0.025)	0.014	(0.016)
Indigenous	0.022	(0.059)	-0.019	(0.130)	0.089	(0.098)	0.045	(0.049)
Non-English speaking background	-0.083**	(0.034)	0.006	(0.045)	0.046	(0.035)	-0.015	(0.021)
Has a disability	-0.051	(0.047)	-0.097	(0.060)	-0.012	(0.044)	-0.034	(0.028)
Highest prior qualification (ref. case: less than Year 12 or equiv.) <sup>a</sup>								
Year 12 or equiv.	0.045	(0.030)	0.063	(0.059)	-0.084*	(0.046)	0.050**	(0.020)
Certificate III & IV	0.136***	(0.042)	0.081	(0.061)	-0.037	(0.040)	0.084***	(0.023)
Diploma and above	0.063	(0.082)	0.018	(0.091)	-0.015	(0.041)	0.083***	(0.027)
Country of birth (ref. case: Australia)								
Other main English speaking	0.065	(0.062)	-0.018	(0.093)	-0.012	(0.034)	-0.007	(0.029)
Non-English speaking country	0.076	(0.065)	-0.052	(0.056)	-0.045	(0.038)	-0.009	(0.027)
Received income support while studying	-0.026	(0.026)	-0.106***	(0.035)	-0.057	(0.049)	-0.055***	(0.019)
Employed or in own business while studying	-0.036	(0.023)	0.104***	(0.038)	0.146***	(0.032)	0.054***	(0.017)

	15–19 years		20–24 years who completed a higher-level course		25 years and older who completed a diploma course or above		All	
	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.
Age for 15–19 (ref. case: 15)								
16	0.150*	(0.078)	-	-	-	-	-	-
17	0.182**	(0.075)	-	-	-	-	-	-
18	0.266***	(0.077)	-	-	-	-	-	-
19	0.244***	(0.079)	-	-	-	-	-	-
Age for 20–24 (ref. case: 20)								
21	-	-	0.073*	(0.038)	-	-	-	-
22	-	-	0.032	(0.041)	-	-	-	-
23	-	-	0.038	(0.045)	-	-	-	-
24	-	-	0.086	(0.056)	-	-	-	-
Age for 25+ (ref. case: 25–34)								
35–44	-	-	-	-	0.038	(0.027)	-	-
45–54	-	-	-	-	-0.001	(0.028)	-	-
55–65	-	-	-	-	0.008	(0.037)	-	-
65+	-	-	-	-	-0.088	(0.100)	-	-
Age for all (ref. case: 15–19)								
20–24	-	-	-	-	-	-	0.015	(0.020)
25+	-	-	-	-	-	-	0.049*	(0.028)
Employment prior to study								
Employment status (ref. case: out of work)								
Employed full-time	0.332***	(0.094)	0.233**	(0.113)	0.416***	(0.096)	0.344***	(0.056)
Employed part-time	0.302***	(0.092)	0.249**	(0.112)	0.440***	(0.097)	0.351***	(0.055)
Casually employed <sup>b</sup>	-0.550***	(0.035)	-0.432***	(0.039)	-0.565***	(0.035)	-0.539***	(0.020)
Occupation (1-digit ANZSCO) prior to study (ref. case: labourer)								
Managers	0.025	(0.077)	-0.009	(0.084)	-0.066	(0.070)	-0.007	(0.034)
Professionals	-0.113	(0.102)	0.017	(0.092)	-0.046	(0.070)	-0.001	(0.034)
Technicians and trades workers	0.030	(0.065)	0.037	(0.074)	-0.053	(0.072)	-0.023	(0.036)
Community and personal service workers	-0.034	(0.039)	0.017	(0.063)	-0.071	(0.073)	-0.024	(0.029)
Clerical and administrative workers	-0.012	(0.074)	0.011	(0.072)	-0.037	(0.071)	0.001	(0.034)
Sales workers	0.026	(0.032)	0.065	(0.060)	-0.004	(0.085)	0.022	(0.026)
Machinery operators and drivers	-0.019	(0.082)	0.047	(0.111)	0.017	(0.098)	0.021	(0.051)
Industry of employment (1-digit ANZSIC) prior to study (ref. case: primary industry)								
Manufacturing and construction	0.020	(0.096)	0.071	(0.109)	-0.096	(0.061)	-0.009	(0.050)
Retail and hospitality	0.048	(0.084)	0.015	(0.100)	-0.133**	(0.063)	-0.007	(0.047)
Business services	-0.017	(0.126)	0.108	(0.122)	-0.112	(0.074)	0.019	(0.058)
Administrative services	0.075	(0.107)	0.061	(0.110)	-0.004	(0.061)	0.078	(0.051)
Health and education	0.045	(0.097)	0.116	(0.108)	-0.068	(0.062)	0.061	(0.049)
Professional	-0.030	(0.138)	0.030	(0.132)	-0.051	(0.073)	0.028	(0.060)
Other	-0.012	(0.094)	0.013	(0.113)	-0.103	(0.068)	-0.025	(0.051)

Notes: \*\*\*significant at 1%, \*\*significant at 5% \*significant at 10%.

Estimates were derived using all available observations. For categorical variables with missing values, an 'unknown' category was also included in the estimation. Estimates for the unknown coefficients are not estimated to save space.

a Certificate II is treated as equivalent to Year 12.

b Treated as those who do not receive both holiday and sick leave.

**Table C10 Difference-in-differences regression estimates of VTG impacts on graduates being in a higher skilled job after training, by age cohort (robust standard error)**

	15–19 years		20–24 years who completed a higher-level course		25 years and older who completed a diploma course or above		All	
	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.
Victoria	-0.086**	(0.038)	0.047	(0.045)	-0.069**	(0.033)	-0.033	(0.022)
Post-reform cohort (2010 entry)	-0.062*	(0.036)	0.021	(0.040)	-0.022	(0.034)	-0.024	(0.021)
Victoria x post-reform cohort	0.077	(0.051)	-0.106*	(0.059)	0.035	(0.042)	-0.003	(0.029)
Study characteristics								
Private provider	-0.085**	(0.043)	0.062	(0.060)	-0.103***	(0.026)	-0.048**	(0.023)
Field of study (1-digit ASCED)								
Course field of study (ref. case: management and commerce)								
Natural and physical sciences	-0.047	(0.193)	0.448***	(0.160)	-0.046	(0.127)	0.163	(0.106)
Information technology	-0.131*	(0.067)	0.073	(0.093)	0.035	(0.061)	0.014	(0.042)
Engineering and related technologies	0.059	(0.057)	0.035	(0.073)	0.017	(0.052)	0.051	(0.034)
Architecture and building	0.190**	(0.079)	0.053	(0.079)	0.126*	(0.071)	0.133***	(0.042)
Agriculture	-0.126*	(0.075)	-0.026	(0.095)	0.070	(0.070)	-0.031	(0.045)
Health	0.125**	(0.057)	0.180***	(0.065)	0.116***	(0.043)	0.144***	(0.031)
Education	0.475**	(0.188)	-0.440***	(0.067)	0.121**	(0.060)	0.128**	(0.063)
Society and culture	0.097**	(0.042)	0.035	(0.045)	0.057*	(0.031)	0.070***	(0.022)
Creative arts	-0.023	(0.051)	-0.056	(0.051)	0.055	(0.059)	-0.015	(0.030)
Food	0.033	(0.044)	0.090	(0.072)	0.128	(0.138)	0.063*	(0.034)
Mixed field programs	0.001	(0.059)	-0.091	(0.087)	-0.086	(0.064)	-0.022	(0.047)
Course level (ref. case: certificate I & II)								
Cert. III & IV	-0.014	(0.033)	0.238*	(0.125)	-	-	0.011	(0.029)
Diploma and above	-0.031	(0.046)	0.311**	(0.128)	-	-	0.036	(0.034)
Received recognised prior learning	-0.047*	(0.026)	-0.047	(0.032)	-0.057**	(0.029)	-0.055***	(0.016)
Socioeconomic variables								
Area of residence (ref. case: metropolitan)								
Inner and outer regional	0.031	(0.029)	-0.019	(0.034)	0.003	(0.023)	0.008	(0.016)
Remote and very remote	-0.238***	(0.081)	0.066	(0.153)	0.125	(0.185)	-0.053	(0.088)
SEIFA index of disadvantage (ref. case: third least disadvantaged)								
Middle disadvantage	-0.063*	(0.033)	-0.011	(0.040)	-0.010	(0.025)	-0.036*	(0.019)
Third most disadvantaged	-0.056*	(0.031)	0.004	(0.036)	-0.009	(0.024)	-0.026	(0.017)
Male	-0.003	(0.032)	-0.022	(0.037)	0.005	(0.024)	-0.005	(0.017)
Indigenous	0.039	(0.079)	-0.199*	(0.104)	-0.193***	(0.039)	-0.060	(0.057)
Non-English speaking background	-0.033	(0.042)	-0.086*	(0.050)	-0.040	(0.031)	-0.044*	(0.023)
Has a disability	0.059	(0.077)	0.155*	(0.081)	0.072	(0.045)	0.109***	(0.036)
Highest prior qualification (ref. case: less than Year 12 or equiv.) <sup>a</sup>								
Year 12 or equiv.	-0.003	(0.038)	-0.030	(0.063)	0.037	(0.047)	0.028	(0.024)
Certificate III & IV	-0.005	(0.048)	-0.039	(0.066)	0.037	(0.039)	0.020	(0.025)
Diploma and above	-0.047	(0.081)	-0.131	(0.097)	0.020	(0.040)	-0.008	(0.028)
Country of birth (ref. case: Australia)								
Other main English speaking	-0.125**	(0.061)	0.087	(0.101)	-0.044	(0.027)	-0.054**	(0.026)
Non-English speaking country	-0.029	(0.073)	0.067	(0.065)	-0.045	(0.037)	-0.011	(0.028)
Received income support while studying	0.047	(0.034)	-0.047	(0.039)	0.093*	(0.050)	0.033	(0.022)
Employed or in own business while studying	-0.023	(0.030)	-0.020	(0.041)	-0.032	(0.028)	-0.030	(0.019)

	15–19 years		20–24 years who completed a higher-level course		25 years and older who completed a diploma course or above		All	
	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.
Age for 15–19 (ref. case: 15)								
16	-0.058	(0.129)	-	-	-	-	-	-
17	-0.040	(0.126)	-	-	-	-	-	-
18	0.104	(0.128)	-	-	-	-	-	-
19	0.035	(0.130)	-	-	-	-	-	-
Age for 20–24 (ref. case: 20)								
21	-	-	0.015	(0.040)	-	-	-	-
22	-	-	0.021	(0.045)	-	-	-	-
23	-	-	0.066	(0.047)	-	-	-	-
24	-	-	-0.007	(0.053)	-	-	-	-
Age for 25+ (ref. case: 25–34)								
35–44	-	-	-	-	-0.013	(0.027)	-	-
45–54	-	-	-	-	-0.054*	(0.028)	-	-
55–65	-	-	-	-	-0.021	(0.037)	-	-
65+	-	-	-	-	-0.028	(0.067)	-	-
Age for All (ref. case: 15–19)								
20–24	-	-	-	-	-	-	0.061***	(0.023)
25+	-	-	-	-	-	-	0.132***	(0.031)
Employment prior to study								
Employment status (ref. case: out of work)								
Employed full-time					0.159	(0.113)	-0.056	(0.148)
Employed part-time	0.026	(0.044)	0.014	(0.041)	0.142	(0.115)	-0.067	(0.148)
Casually employed <sup>b</sup>	0.076**	(0.034)	0.007	(0.038)	0.031	(0.031)	0.037*	(0.019)
Occupation (1-digit ANZSCO) prior to study (ref. case: labourer)								
Managers	-0.341***	(0.044)	-0.476***	(0.061)	-0.544***	(0.072)	-0.426***	(0.031)
Professionals	-0.365***	(0.057)	-0.456***	(0.068)	-0.572***	(0.072)	-0.448***	(0.031)
Technicians and trades workers	-0.238***	(0.062)	-0.360***	(0.074)	-0.409***	(0.080)	-0.316***	(0.037)
Community and personal service workers	-0.213***	(0.041)	-0.278***	(0.063)	-0.369***	(0.078)	-0.259***	(0.030)
Clerical and administrative workers	-0.144**	(0.070)	-0.179**	(0.074)	-0.453***	(0.075)	-0.268***	(0.036)
Sales workers	-0.029	(0.037)	-0.119*	(0.061)	-0.132	(0.087)	-0.073**	(0.029)
Machinery operators and drivers	-0.248***	(0.081)	-0.374***	(0.090)	-0.396***	(0.106)	-0.276***	(0.052)
Industry of employment (1-digit ANZSIC) prior to study (ref. case: primary industry)								
Manufacturing and construction	-0.196*	(0.111)	-0.035	(0.131)	0.117*	(0.061)	-0.031	(0.056)
Retail and hospitality	-0.194**	(0.098)	-0.023	(0.124)	0.088	(0.059)	-0.045	(0.054)
Business services	-0.122	(0.146)	-0.079	(0.145)	0.189**	(0.075)	0.016	(0.065)
Administrative services	-0.273**	(0.119)	-0.080	(0.131)	0.084	(0.064)	-0.073	(0.058)
Health and education	-0.206*	(0.112)	-0.148	(0.129)	0.075	(0.057)	-0.090*	(0.055)
Professional	-0.365***	(0.112)	0.076	(0.151)	0.063	(0.062)	-0.061	(0.060)
Other	-0.280**	(0.109)	-0.114	(0.135)	0.083	(0.067)	-0.092	(0.058)

Notes: \*\*\*significant at 1%, \*\*significant at 5% \*significant at 10%.

Estimates were derived using all available observations. For categorical variables with missing values, an 'unknown' category was also included in the estimation. Estimates for the unknown coefficients are not estimated to save space.

a Certificate II is treated as equivalent to Year 12.

b Treated as those who do not receive both holiday and sick leave.

**Table C11 Difference-in-differences regression estimates of VTG impacts on graduates' study after training, by age cohort (robust standard error)**

	15–19 years		20–24 years who completed a higher-level course		25 years and older who completed a diploma course or above		All	
	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.
Victoria	-0.003	(0.029)	-0.021	(0.039)	0.000	(0.037)	0.001	(0.019)
Post-reform cohort (2010 entry)	0.009	(0.026)	-0.068*	(0.036)	0.054	(0.035)	0.004	(0.018)
Victoria x post-reform cohort	0.050	(0.038)	0.059	(0.052)	-0.017	(0.048)	0.028	(0.026)
Study characteristics								
Private provider	-0.027	(0.043)	-0.028	(0.056)	-0.029	(0.044)	-0.025	(0.026)
Field of study (1-digit ASCED)								
Course field of study (ref. case: management and commerce)								
Natural and physical sciences	-0.039	(0.115)	-0.099	(0.125)	-0.017	(0.105)	-0.056	(0.066)
Information technology	0.191***	(0.047)	0.117**	(0.055)	-0.023	(0.059)	0.106***	(0.030)
Engineering and related technologies	0.037	(0.040)	-0.051	(0.064)	-0.038	(0.055)	-0.015	(0.028)
Architecture and building	-0.007	(0.053)	-0.200***	(0.064)	-0.018	(0.070)	-0.078**	(0.035)
Agriculture	0.159***	(0.055)	-0.004	(0.099)	-0.056	(0.083)	0.052	(0.041)
Health	0.011	(0.041)	-0.091	(0.059)	0.005	(0.051)	-0.028	(0.028)
Education	0.486***	(0.065)	-0.067	(0.365)	0.085	(0.098)	0.123	(0.084)
Society and culture	0.064**	(0.032)	-0.003	(0.041)	-0.016	(0.036)	0.020	(0.020)
Creative arts	0.108***	(0.037)	0.048	(0.044)	-0.010	(0.052)	0.054**	(0.024)
Food	-0.012	(0.034)	-0.201***	(0.063)	-0.014	(0.124)	-0.066**	(0.028)
Mixed field programs	0.176***	(0.038)	0.218***	(0.067)	0.052	(0.166)	0.149***	(0.031)
Course level (ref. case: certificate I & II)								
Cert. III & IV	-0.032	(0.024)	0.130	(0.094)	-	-	0.003	(0.021)
Diploma and above	-0.133***	(0.035)	0.050	(0.097)	-	-	-0.073***	(0.027)
Received recognised prior learning	-0.030	(0.019)	-0.142***	(0.027)	-0.055*	(0.029)	-0.063***	(0.014)
Socioeconomic variables								
Area of residence (ref. case: metropolitan)								
Inner and outer regional	-0.026	(0.022)	-0.018	(0.031)	0.038	(0.029)	-0.005	(0.015)
Remote and very remote	0.115	(0.096)	-0.029	(0.152)	-0.099	(0.158)	0.034	(0.073)
SEIFA index of disadvantage (ref. case: Third least disadvantaged)								
Middle disadvantage	-0.024	(0.026)	0.025	(0.036)	-0.003	(0.032)	-0.003	(0.018)
Third most disadvantaged	-0.012	(0.024)	-0.040	(0.031)	-0.006	(0.029)	-0.014	(0.016)
Male	-0.029	(0.023)	0.034	(0.031)	0.025	(0.028)	0.008	(0.015)
Indigenous	-0.061	(0.056)	-0.109	(0.092)	0.209*	(0.112)	-0.030	(0.044)
Non-English speaking background	0.065**	(0.030)	-0.000	(0.039)	-0.015	(0.039)	0.027	(0.020)
Has a disability	0.022	(0.037)	0.033	(0.054)	0.076*	(0.043)	0.050**	(0.024)
Highest prior qualification (ref. case: less than Year 12 or equiv.) <sup>a</sup>								
Year 12 or equiv.	0.090***	(0.027)	0.079	(0.050)	-0.015	(0.053)	0.106***	(0.019)
Certificate III & IV	0.043	(0.038)	0.048	(0.053)	0.046	(0.045)	0.088***	(0.022)
Diploma and above	0.168**	(0.069)	0.219***	(0.080)	0.063	(0.046)	0.117***	(0.028)
Country of birth (ref. case: Australia)								
Other main English speaking	0.004	(0.056)	-0.038	(0.086)	-0.038	(0.043)	-0.016	(0.031)
Non-English speaking country	-0.025	(0.046)	0.079*	(0.047)	-0.022	(0.042)	-0.011	(0.025)
Received income support while studying	0.018	(0.022)	0.028	(0.030)	0.021	(0.039)	0.027*	(0.016)
Employed or in own business while studying	0.064***	(0.024)	0.036	(0.036)	0.007	(0.032)	0.044***	(0.016)

	15–19 years		20–24 years who completed a higher-level course		25 years and older who completed a diploma course or above		All	
	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.	coeff.	s.e.
Age for 15–19 (ref. case: 15)								
16	0.125	(0.086)	-	-	-	-	-	-
17	0.201**	(0.084)	-	-	-	-	-	-
18	0.228***	(0.085)	-	-	-	-	-	-
19	0.235***	(0.086)	-	-	-	-	-	-
Age for 20–24 (ref. case: 20)								
21	-	-	-0.031	(0.034)	-	-	-	-
22	-	-	-0.026	(0.038)	-	-	-	-
23	-	-	-0.063	(0.041)	-	-	-	-
24	-	-	-0.033	(0.054)	-	-	-	-
Age for 25+ (ref. case: 25–34)								
35–44	-	-	-	-	-0.047	(0.030)	-	-
45–54	-	-	-	-	-0.055*	(0.033)	-	-
55–65	-	-	-	-	-0.003	(0.047)	-	-
65+	-	-	-	-	-0.128	(0.125)	-	-
Age for All (ref. case: 15–19)								
20–24	-	-	-	-	-	-	-0.075***	(0.018)
25+	-	-	-	-	-	-	-0.132***	(0.027)
Employment prior to study								
Employment status (ref. case: out of work)								
Employed full-time	-0.213**	(0.098)	0.029	(0.105)	-0.090	(0.095)	-0.090	(0.056)
Employed part-time	-0.170*	(0.092)	0.062	(0.106)	-0.054	(0.098)	-0.051	(0.057)
Casually employed <sup>b</sup>	0.108***	(0.037)	0.025	(0.038)	0.062*	(0.037)	0.070***	(0.021)
Occupation (1-digit ANZSCO) prior to study (ref. case: labourer)								
Managers	-0.150	(0.105)	-0.059	(0.090)	-0.012	(0.073)	-0.030	(0.039)
Professionals	0.096	(0.143)	-0.046	(0.098)	0.080	(0.074)	0.059	(0.040)
Technicians and trades workers	0.027	(0.079)	-0.053	(0.075)	-0.005	(0.077)	-0.017	(0.039)
Community and personal service workers	-0.023	(0.043)	-0.077	(0.059)	0.001	(0.075)	-0.023	(0.030)
Clerical and administrative workers	0.039	(0.072)	-0.065	(0.066)	0.010	(0.072)	0.006	(0.035)
Sales workers	-0.006	(0.035)	-0.122**	(0.055)	-0.043	(0.080)	-0.028	(0.027)
Machinery operators and drivers	0.046	(0.093)	0.037	(0.105)	0.097	(0.105)	0.067	(0.054)
Industry of employment (1-digit ANZSIC) prior to study (ref. case: primary industry)								
Manufacturing and construction	0.069	(0.099)	0.216*	(0.112)	-0.068	(0.089)	0.046	(0.056)
Retail and hospitality	-0.024	(0.087)	0.261**	(0.105)	-0.012	(0.089)	0.048	(0.053)
Business services	-0.009	(0.138)	0.252*	(0.135)	0.020	(0.108)	0.066	(0.070)
Administrative services	-0.023	(0.112)	0.229*	(0.118)	0.068	(0.095)	0.103*	(0.061)
Health and education	-0.060	(0.105)	0.096	(0.114)	-0.075	(0.091)	-0.028	(0.057)
Professional	-0.049	(0.145)	0.260*	(0.136)	-0.014	(0.104)	0.048	(0.069)
Other	-0.046	(0.099)	0.245**	(0.117)	-0.031	(0.097)	0.047	(0.060)

Notes: \*\*\*significant at 1%, \*\*significant at 5% \*significant at 10%.

Estimates were derived using all available observations. For categorical variables with missing values, an 'unknown' category was also included in the estimation. Estimates for the unknown coefficients are not estimated to save space.

a Certificate II is treated as equivalent to Year 12.

b Treated as those who do not receive both holiday and sick leave.

**Table C12 Unconditional difference-in-differences impacts of the VTG for equity group graduates**

Equity groups	Pre-reform cohort <sup>a</sup>		Post-reform cohort <sup>b</sup>		Difference-in-differences
	Victoria	NSW	Victoria	NSW	
Employed (%)					
English as a second language	58.06	47.101	54.555	47.399	-3.803
Indigenous	90.284	46.373	59.624	52.042	-36.328*
With a disability	50.481	38.939	56.177	43.788	0.847
Full-time employed (%)					
English as a second language	24.891	23.51	18.724	22.111	-4.768
Indigenous	35.966	20.583	45.765	20.624	9.758
With a disability	20.769	11.84	16.725	12.464	-4.668
In study (%)					
English as a second language	44.485	49.303	55.083	50.655	9.247
Indigenous	70.958	35.714	34.733	45.076	-45.587**
With a disability	54.459	50.571	43.643	50.461	-10.706
Mean course satisfaction (1–5)					
English as a second language	4.281	4.313	4.252	4.226	0.057
Indigenous	4.431	4.467	4.645	4.248	0.432
With a disability	4.278	4.323	3.993	4.271	-0.234
Count (N)					
English as a second language	239	362	343	313	-
Indigenous	15	43	17	69	-
With a disability	92	113	116	140	-

Notes: \*\*\*significant at 1%; \*\*significant at 5%; \*significant at 10%.

Skill shortages are identified using state-based skill shortage lists. Pre-reform lists are from 2008 and post-reform lists are from 2010.

a Pre-reform cohort is limited to those who commenced their course in January or February 2008 and were observed to have completed by December 2009 (using information from the 2009 and 2010 Student Outcome Surveys).

b The post-reform cohort is limited to those who commenced their course in January or February 2010 and were observed to have completed by December 2011 (using the information from the 2011 and 2012 Student Outcome Surveys).

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